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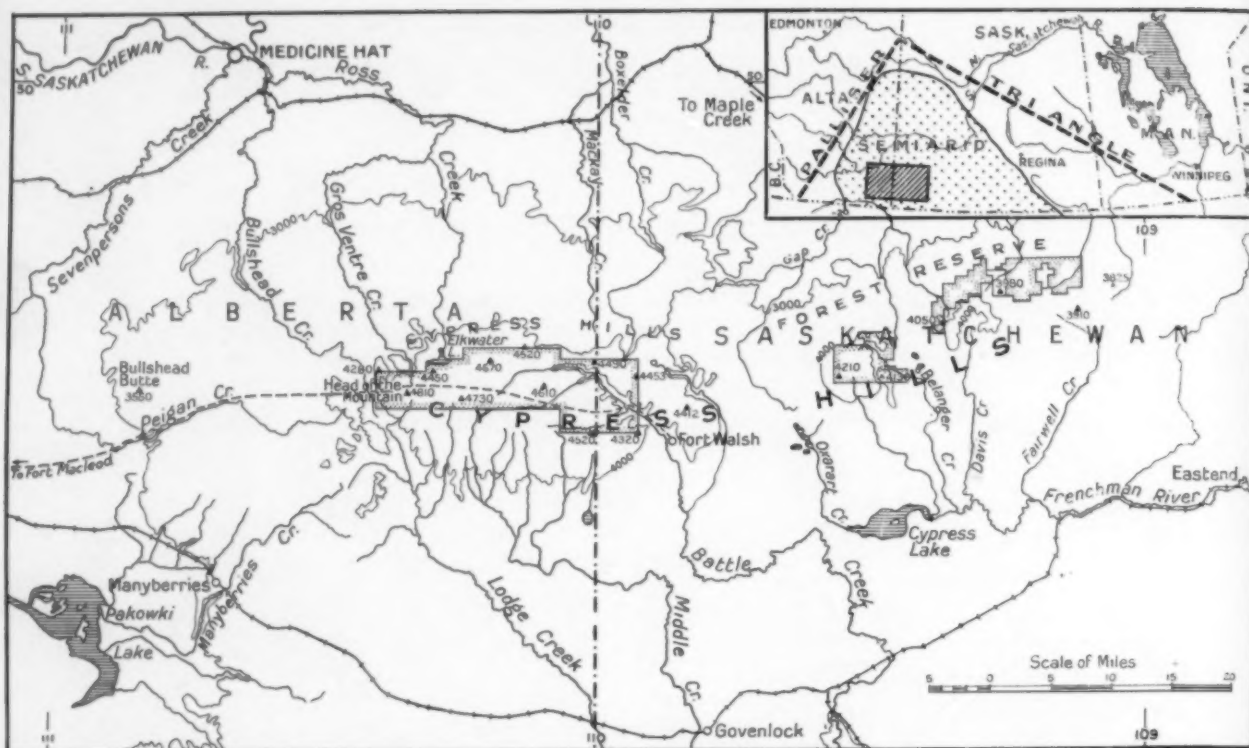
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*Saskatchewan Dept. of Natural Resources.*

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Canadian Geographical Journal map

# The Cypress Hills

by WILFRID EGGLESTON

**T**HE SUMMIT of the Cypress Hills is the highest Canadian elevation between Labrador and the Rockies. These Hills occupy a total area of about a thousand square miles, and straddle the Alberta-Saskatchewan border, a few miles north of Montana. They play a prominent part in the lore of the Great Plains, and are of considerable interest to the geologist and student of natural history. They were first seen by French-speaking fur traders, who named them after the pine trees growing plentifully there. *Cyprès*, their word for jack pine, became corrupted into the present "Cypress", which is misleading, since the true cypress tree is not to be found anywhere in that region.

Much of the importance of the Cypress Hills arises from their geographical setting. In the middle of the last century, maps of

the interior of North America commonly displayed a long narrow strip of country east of the Rockies, from the borders of Mexico north, which was labelled the 'Great American Desert'. Some of these maps showed the 'Desert' as extending north across the international boundary into the Hudson Bay trading territory which is now western Canada. The wedge we have come to know as "Palliser's Triangle" represents what Captain Palliser considered to be the northern tip of this 'Desert'.

Later exploration largely disposed of the myth or tradition of an interior North American desert. "Palliser's Triangle" was found on further inquiry to be a short-grass treeless country, subject to severe cycles of drought, but favoured by more beneficent periods of heavier rainfall and cooler sum-



## THE CYPRESS HILLS

mers, during which enormous harvests of cereals, especially high-protein hard wheat, could be produced.

The Cypress Hills lie near the centre of the base of "Palliser's Triangle", to which I have referred here only so as to emphasize the importance and value of these Hills. The forests, lakes, streams and rich pasture of the Cypress Hills would be inconspicuous in many parts of the world. On the dry treeless plains they stand out prominently.

Palliser himself took flattering notice of the Cypress Hills. After a hot, dry, dusty expedition down through what is now the Empress-Medicine Hat country, Palliser's party camped in and near them for a couple of nights. On July 28th, 1859, he inscribed the following note in his log:

"The Cypress Mountains formed indeed a great contrast to the level country through which we have been travelling: they are covered with timber, much of which is very valuable for building purposes, the soil is rich, and the supply of water abundant. *These hills are a perfect oasis in the desert we have travelled.*"

On the following day when he was camped at longitude 110° 35', latitude 49° 38', 28 miles due south of the present city of Medicine Hat he wrote in his journal: "We were

now well supplied with wood, water and grass, a rare combination of happy circumstances in our experience of this season's explorations."

The Cypress Hills form an oasis essentially because their superior elevation radically alters, for the better, their humidity and temperature. They are wetter and cooler than the surrounding plains. At the west end they rise to a maximum elevation of 4,810 feet (which is 300 feet higher than the railway station at Banff). The "Head of the Mountain" is 2,730 feet higher than the city of Medicine Hat, a few miles to the northwest. The average height of the whole Hills plateau region above the surrounding plains would be about 1,500 feet.

"Palliser's Triangle" owes its arid or semi-arid character to low precipitation (averaging 12 or 13 inches a year over a large part of it) and hot winds, which result in excessive evaporation in June, July and August. The summit of the Hills enjoys an average of 18 to 20 inches of precipitation a year, and the effectiveness of this moisture is enhanced by lower temperatures in summer.

The net result is that as one travels from the plains surrounding, say, Maple Creek or Medicine Hat, to the top of the Hills, one passes from an arid or semi-arid climate to a

*Within the Hills the barren country gives way to pasture and woodland.*

R.C.M.P.





*Terrain of the Eastend district of Cypress Hills seen from the air.*

M. Kesterton

sub-humid climate. The effect is similar to the transition from Swift Current, say, to Portage la Prairie. In the former case the distance is 25 miles or so, in the latter 500. The contrast, as Palliser must have experienced it, is impressive. The arid flats north of the Cypress Hills can be like an inferno on a dry July afternoon, while a few miles south, on the top of the Hills, it is cool, verdant, even luxuriant. Heavy rains on the Hills peter out to light showers at Medicine Hat. "In all my wanderings," wrote John Macoun, Dominion botanist, after a survey in the 1870's, "I never saw any spot equal in beauty to the central plateau of the Cypress Hills." And he added:

"The grasses and other forage plants of the Hills were those peculiar to coolness and altitude, but were all highly nutritious, and almost identical with those found on the higher plateaus at Morley. In all the valleys, and on the rich soil of the higher grounds, the grass was tall enough

for hay. No better summer pasture is to be found in all the wide North-west than exists on these hills, as the grass is always green, water of the best quality always abundant, and shelter from the autumnal and winter storms always at hand."

The Cypress Hills are of exceptional interest to the geologist, as they are to the botanist and the zoologist. M. Y. Williams and W. S. Dyer, in Memoir 163 of the Department of Mines (1930) say: "... in wealth of interest both for the stratigrapher and the physiographer, Cypress Hills hold a unique place ... [they] appear as a gentle swell in the prairie level, rather than a sharp feature. They, in fact, are the central part of a large, elevated tract of land forming the divide between the Saskatchewan and Missouri drainage in southwestern Saskatchewan and the adjoining portion of Alberta ... The most striking feature of Cypress Hills is the nearly level, plateau-like tops whose characters are those of a plain and



*Erosion of Lower Milk River south of the Cypress Hills.*

Geological Survey

upon which a heavy growth of grass formerly flourished between areas of park land or forest growth. The steep slopes and gorges meet the upland surfaces at marked angles and strongly contrast with them."

Geologists' theories of the origin of the Cypress Hills have shown considerable development as new information became available. R. G. McConnell, the first geologist to

make a comprehensive survey of the region, suggested that the Hills were an erosion remnant, surviving because they were protected to some extent by a thick hard cap of conglomerate, consisting of large quartz boulders, which had resisted the erosive forces more than the softer sedimentary rocks unprotected by such a cap. This theory was generally accepted by subsequent geo-

*Looking west along the western point of the north escarpment of the Cypress Hills.*

National Museum







Geological survey  
*Upper Pale beds showing cross bedding*



A. Breitung  
*Cypress Hills conglomerate near head of Suicide Coulee.*



logists. However, G. M. Furnival (in Geological Survey Memoir 242), basing his argument on additional data uncovered by American and Canadian geologists, including his own surveys of 1940 and 1941, proposes as an important additional factor the effects of local uplift connected with the volcanic and tectonic forces which created such neighbouring elevations as the Sweet Grass Hills, the Bearpaw Mountains and the Little Rockies. McConnell's explanation was as follows:

"The area now covered by the Cypress Hills has been changed from a depression in . . . [Oligocene] times into the highest plateau on the plains, which is its present position, *entirely by the arrest of denudation over its surface by the hard conglomerate beds which cover it*, whilst the surrounding country, destitute of such protection, has been gradually lowered."

Furnival takes account of the observations of W. C. Alden, who made an extensive study of the Great Plains of the United States, and found similar deposits of boulders and pebbles of quartz over a wide area in Montana, the Dakotas and Wyoming. "The surface of these," says Furnival, "he correlated into a plain that he named the Cypress Plain. He conceived these deposits as having 'spread over a broad, gently sloping, nearly flat plain composed of coalescing fans heading at those points where the streams debouched from the mountain gorges'." In layman's language, the present level top of the Cypress Hills was once the bed of a broad swift mountain stream bringing quartz pebbles and boulders down from the Rocky Mountains.

But if Alden is right, most of the original widespread Cypress plain, capped by similar conglomerates of quartz boulders, has disappeared. Why did the relatively small island constituting the present plateau of the Cypress Hills, escape such erosive forces? Furnival found evidence that the conglomerate cap was not so resistant to erosion as McConnell had believed. He adduces evidence to show that hills existed at the present site in Eocene time, long before the Cypress

*Large concretions on Bearpaw beds. Note man by central boulder.*

L. S. Russell



Hills conglomerate was laid down as an alluvial deposit from the region of the Rocky Mountains. That the whole region of the southwestern plains has undergone repeated regional uplifts, some of them of several thousand feet, is generally accepted by geologists; and there is additional evidence that numerous *local* uplifts also occurred, accompanied in some areas by volcanic and igneous intrusions. After marshalling the evidence, Furnival sums up as follows:

"The writer's conclusion is that the Cypress Hills area, which is indicated by the data presented in this report to be underlain by an eastward plunging anticline, was folded, like many other isolated mountain areas in the southwestern Plains, in late Eocene or very early Oligocene time, and has continued as a positive element to the present; and, furthermore, that the Hills have been preserved as such because they are anticlinal, and drainage channels were diverted from them."

The west end of the Cypress Hills shares with one other small area on the Great Plains the distinction of having never been submerged under any one of the great ice-sheets which flowed down from the Rocky Mountains or advanced from the Keewatin area. "The western part of the Cypress Hills," wrote R. G. McConnell, "is entirely unglaciated, and must have formed an island in glacial times projecting about 400 feet above the surface, as no drift or other mark of glacial action was observed within that distance of the summit."

August J. Breitung, a botanist of the Department of Agriculture, who made a survey of the area in the summer of 1947, is authority for the statement that as a result of its preservation from the action of glacial ice, the west end of the Cypress Hills is now the habitat of "a relict flora of some fifty foothills and Rocky Mountain species" of plants. "None of these," he writes, "has spread far beyond the unglaciated area, and some are rare and localized in special habitats."

E. H. Strickland, professor of entomology at the University of Alberta, found exotic species of insects and animal life in the

*Outcrop of Cypress Hills conglomerate. Cypress plain in background.*

L. S. Russell

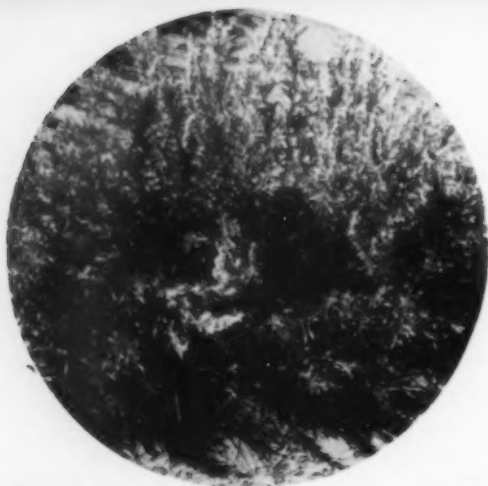


Geological survey  
*Ravenscrag sandstone on north side of hills.*



Geological survey  
*Looking west over Cypress plain.*





L. S. Russell

National Museum



Above:—Prickly pear cactus

Left:—Flower of the yucca

Circle:—Sagebrush in bloom



country surrounding the Cypress Hills, including scorpions, horned toads, arachnids closely related to the scorpions and known as solpugids, white ants, kangaroo rats and hog-nosed vipers. The sub-tropical plant, Yucca grass, was also found there. Professor Strickland hazarded the suggestion that throughout the Ice Age such exotic species may have survived on this 83-square-mile 'island' which protruded above the ice shield, and that these insects, animals and

plants, which may have been native to a more tropical Alberta millions of years ago, before the Ice Age, managed to persist throughout the period when all the rest of the prairie region was submerged beneath the ice cap.

Professor Strickland's theory has been challenged, however, on the ground that such exotic and sub-tropical plants and animals are not now found in the Hills themselves, but in the arid heat-baked regions nearby, where sagebrush and cactus are prevalent. In any case the existence of such unusual phenomena today is not denied, and they do add to the fascination of the country surrounding the Cypress Hills.

We come now to more recent events. The favorable climate of the Cypress Hills ensured heavy pasture, perpetual springs of potable water, forests, and game.\* The latter included bison (buffalo), deer, antelope, beaver and grizzly bear. The game, the wood and the water attracted the Plains Indians. There were fine extensive stands of lodgepole pine (*pinus contorta* or *murrayana*) valuable for erecting teepees. In a letter to the *Medicine Hat News*, Senator F. W. Gershaw, a student of western lore, wrote: "The region for ages had been a haven, a sanctuary, and a hunting ground for the wandering Indian tribes of the plains . . . The coulée in the western end is called Medicine Lodge. Here the tribes gathered each sum-

\*Isaac Cowie (in *The Company of Adventurers*) says that "incredible numbers of grizzly bears and red deer were killed in the Cypress Hills in the winter of 1871-2, 'of which our share of the skins numbered 750 and 1,500 respectively, and probably the traders and Metis who were not our customers got as many more'". p. 436.

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mer to worship the Great Spirit in the pagan ritual of the sun dance. At such times in the evenings for many miles around could be heard the rhythmical beat of the tom-tom and the tribal chant . . . These cruel observances were forbidden as soon as the N.W. M.P. had taken control. The last one in the Hills was held in 1890."

For many years the Hills marked the boundary between the area dominated by the Assiniboinés and that occupied by the tribes of the Blackfoot nation; and there must have been frequent gory clashes. The seven corpses of Blackfoot or Blood Indians which were found together and which later gave their name to Seven Persons Creek, just west of the Hills, may represent victims of this constant strife. Palliser describes the Cypress Hills as being Assiniboine country, and says that the Bloods and Blackfeet accompanying his party were terrified at the notion of entering the Hills. When Inspector J. M. Walsh of the North West Mounted Police was paying treaty money at Fort Walsh, in the heart of the Hills, in September, 1877, he wrote thus of the Assiniboinés: "The country of their forefathers extends from the west end of Cypress Mountain to Wood Mountain on the east, north to the South Saskatchewan and south to Milk River." He speaks of some of them wintering at the "west end of the mountain". This is the place which is sometimes called "Head

of the Mountain" (where the Hills rise to their highest point of 4,810 feet) and which commands Medicine Lodge coulee mentioned above.

In his annual report of 1880, Assistant Commissioner A. G. Irvine of the N.W.M.P. observed that the Hills attracted Indian bands looking for buffalo — also for wood. "Such Indians," he added, "are likely, without the presence of the police, to make the Cypress Hills the scene of their battle-grounds, as they have done in former years." In his report two years later he remarks of the Assiniboinés: "These Indians have always looked upon the Cypress Hills as their home."

*Right:—Deer*

*Below:—Antelope*

*Circle:—Beaver*



National Parks Service







*Covered wagons drawn up at Fort Walsh, photographed in 1878.*

Public Archives

If the Cypress Hills attracted the Indians and half-breeds, increasingly so as the bison became more scarce on the plains, the presence of Indians and half-breeds around the Hills in turn interested traders and whiskey-runners from across the international boundary. The report in 1873 of a massacre of Assiniboiné Indians in the Cypress Hills by whiskey traders from Fort Benton was one of the precipitating incidents in the creation of the North West Mounted Police, whose formation had first been urged by Lieutenant W. F. Butler of the British 69th Regiment in a report dated 1871.

The exact nature of the Cypress Hills massacre seems to be in some dispute. R. C. Fetherstonhaugh, whose history of the R.C. M.P. is based on the Force's own records and documents, recalls that the report reaching Ottawa in 1873 asserted that a band of whiskey traders "maddened by consumption of their own crude alcohol, had massacred a band of Assiniboiné Indians, who, under Chief Little Stony Spirit, were hunting in

the Cypress Hills, forty miles north of the Montana boundary. On the reported evidence of Abe Farwell, an American trader of good repute, the outlaw traders were said to have sold the Assiniboinés a large supply of whiskey and then, when the Indian encampment was whirling in the inevitable orgy of drunkenness, to have opened fire, wantonly killing more than thirty men, women and children."

Fetherstonhaugh adds that while this account is accepted in essentials by many historians, the account given by Isaac Cowie, of the Hudson's Bay Company, who gathered evidence soon after the massacre took place, differed substantially in some details: "Cowie states that the outlaw traders opened fire only when the drunken Indians refused to return a number of stolen horses." Cowie reported that the number of persons massacred was eighty. Whatever the provocation, the significant fact for the Ottawa Government was that many Indians had been murdered on Canadian soil, by invaders from





*Northwest Mounted Police camp at Fort Walsh in 1878.*

R.C.M.P.

another country, and that the Canadian Government was powerless to prevent a recurrence of such incidents until a military or police force was mobilized and sent to the the Great Plains.

The Cypress Hills, and Fort Walsh in their centre, figured prominently, also, in the difficult years 1876-1885. This period began with the arrival of the Sioux, Tetons and Nez Percé Indians, fleeing from the wrath of U.S. cavalry, after the massacre of Custer's force on the Little Big Horn (June 25, 1876), and closed with the quelling of the Saskatchewan Rebellion.

The Plains Indians of Canada, in the 1870's, faced a double threat to their existence. The herds of bison, their sole means of sustenance, were rapidly disappearing. Their ancestral free range was being systematically invaded by the railroad and the Red River cart of the advancing white man. At one season of the year, in 1880, there were as many as 5,000 semi-starving Indians camped about the modest post of Fort Walsh, where

the police at best numbered two or three score officers and men. Hordes of destitute Assiniboines would have been embarrassment enough without the presence further east in Canada of Sitting Bull and his Sioux warriors, who had escaped into Canada after the Custer massacre. Four Horns, head chief of the Tetons, and a band of Nez Percés Indians, all of whom entered Canadian territory in 1876 or 1877, and who did not finally cease to be a thorn in the side of the Mounted Police until Sitting Bull surrendered to the United States army post at Fort Buford on July 21, 1881. The coming of the Canadian Pacific Railway, Chief Piapot's attempt to stop the advance of the railway line, and the unrest that led up to the Saskatchewan Rebellion, were other incidents in a difficult decade for the police detachment in the heart of the Cypress Hills.

The first murder of a white man in the Cypress Hills became something of a *cause célèbre*. Constable Marmaduke N. Graburn of the N.W.M.P., nineteen years of age, was



*Fort Walsh as it is today*

W. Eggleston

shot down from behind as he rode on the edge of a pine-clad coulée, about four miles west of Fort Walsh, on November 7th, 1879. Jerry Potts, the famous Indian guide and interpreter, who was instrumental in finding the body of the slain recruit, and later the carcass of Graburn's pony, killed by two bullets in the brain, offered the theory that it was the work of two Indians. One of these, unsuspected, had ridden in a friendly fashion alongside of Graburn, while the other had closed in from behind to kill him. It was apparently a crime, as R. C. Fetherstonhaugh says, "born of hatred for the Mounted Police," since Graburn had no enemies among the neighbouring tribes. Several months later, a Blood Indian, Star Child, was arrested near Fort Macleod and brought to trial for the murder. Though he admitted his guilt, and the evidence was convincing, the timid jury, apparently frightened by the uproar his arrest had caused among the Bloods, brought in a verdict of 'not guilty'.

The first settlers in the Cypress Hills were attracted by the grazing ranges, the wood

and the shelter. The early N.W.M.P. officers stationed at Fort Walsh, on Battle Creek, considered the site of the fort ill-chosen and unsuitable for a police post. Supt. L. N. F. Crozier in 1879 thought it would be well to move out of the Cypress Hills altogether. A puzzling fever was prevalent among the members of the force and among the Indians camped nearby. The winter storms seemed especially fierce there. Farming operations were not successful. "I think, I may say," Crozier wrote, "that the Cypress Hills are not adapted for farming. The great drawback seems to be the prevalence of heavy summer frosts." In 1881 the Commissioner's report to Ottawa contained the statement that "the police force has been stationed here for six years, and yet there is not a *bona fide* settler within one hundred miles of Fort Walsh". This must have been written, however, just as the first tide of settlers was arriving. Certainly there were traders (T. C. Power and Bros.) and a 'village' at Fort Walsh in the early 1880's. Senator F. W. Gershaw, in the letter to the Medicine Hat

## THE CYPRESS HILLS

*News* already cited, asserts that "the Cypress Hills region was really the birthplace of the western Ranching Industry". R. G. McConnell's report of his geological survey in 1885 contains this interesting reference: "Until within the last few years, that portion of the territories covered by the present report was regarded as almost a desert, and was thought to be entirely unfitted for settlement. The results of the experimental farms instituted by the Canadian Pacific Railway last summer (1884) which were, almost without exception, eminently successful, have been instrumental in dissipating this idea in regard to a large proportion of the district . . .

"The height of the Cypress Hills plateau," he adds, "which at its western end is nearly five thousand feet above the sea, gives it so cold a climate as to render it almost value-

less for anything except stock-raising. But for this purpose it seems especially adapted, as it possesses all the necessary requisites in a high degree. The snowfall is light, and grass, water and shelter are everywhere abundant."

The history of the ranching industry in the Cypress Hills remains to be written, but there are plenty of fascinating incidents waiting to be collected. In his book *Sodbusters*, Grant MacEwan mentions the 'colourful Frenchman, Michael Oxarat', who has left his name to a creek in the Cypress Hills, to a sandstone member of the Bearpaw formation and perhaps to other topographical features. MacEwan says that Oxarat (sometimes spelled Oxarart) came north from Montana with horses in 1884. He was jailed for evading customs but in spite of this disciplinary action he liked the

*This cannon belonged to the original Fort Walsh* Saskatchewan Tourist Branch







*A herd of cattle being driven to market. Cypress Hills is an important ranching district.*

M. Kesterton

region, decided to stay, built a log cabin and drove in three hundred horses from Montana. "Dad" Goff of Govenlock has been described by a local historian (George Shepherd of West Plains P.O.) as 'The Pioneer Rancher of the Cypress Hills'. At the west end of the Hills, which I knew personally as a boy, the early ranchers were mainly Englishmen, some of them 'remittance men'; and there were others from Texas and Montana. W. Everard Edmonds of Edmonton, who spent some time in the Cypress Hills as a student missionary, provides a fascinating touch of colour in his sketch "Nightfall on the Prairie": he is describing a ride back to his quarters after three Sunday services at widely scattered points on the 'Bench' of the Hills. The trail down the escarpment from the "Head of the Mountain" to Elkwater Lake is so steep that he has to force his pony back on to his haunches "to prevent him from pitching me into the valley below. 'Steady, boy! Steady!' Slowly down the

steep descent we advance, until twenty yards from the bottom, and then a smart dash brings us out into the open . . . before us, basking in the soft white moonlight, lies Elkwater Lake, the bride of the Hills . . . as we round the eastern shore the wolfhounds at the 'Hall' set up an angry chorus, and the outcry is increased by other watch-dogs far and near. We are now in the English settlement, and pass in quick succession the shack of an old Oxonian, who rowed stroke for his college crew the year they were head of the river; the more pretentious dwelling of an ex-Guardsman and son of an earl; and the quaint bungalow of an ex-officer of the Indian Civil Service. Hidden behind the hill on the left lives the son of a Sussex vicar. Often, indeed, must these rolling hills remind him of his beloved native Downs."

The value of the forests in the Cypress Hills was immediately recognized by Palliser, since the Hills are surrounded by a treeless plain. It is necessary to travel 150 miles



or more in any direction to find timber of comparable size. August Breitung, Ottawa botanist already quoted, describes the present lodgepole pine forest as "mostly composed of tall, straight, pole-sized individuals averaging from 6-10 inches in diameter". He adds that many trees reaching 18 inches in diameter were recorded by Macoun a few years before the Great Fire of 1886. "The spruce forest," Breitung adds, "is confined to the more moist habitats in valleys and along streams. Spruce trees measuring 40 inches in diameter, with 125 annual rings, are not uncommon, having escaped the fire in 1886."

There are three forest reserves in the Cypress Hills, one in Alberta and two in Saskatchewan.

The chief economic resources of the Cypress Hills are thus its grazing and the output of its forests. Several small irrigation projects are supplied by the run-off from the Cypress Hills, the most important being at Eastend, and Val Marie, in southwestern Saskatchewan. Boulders from the Cypress Hills conglomerate are used in pebble mills. Clay for ceramics is derived from the Whitmud formation. There are deposits of bentonite, and local mining of coal is carried on in a number of places. The tourist attractions of the Cypress Hills have been recognized more and more actively in recent years. Cypress Park, south of Maple Creek, has two lakes, boating and swimming, cabins and a golf course. Elkwater Lake, southeast of Medicine Hat attracts fishermen and campers from that city and other parts of southern Alberta.

My personal interest in the Cypress Hills goes back a long way. Forty years ago my father filed on a homestead in former ranching country that had been thrown open to settlers south of Medicine Hat (unwisely, as events proved). The location proved to be about 20 miles as the crow flies, in a southwesterly direction, from the "Head of the Mountain". During the summer of 1910, which was very dry, especially so on those undulating bare plains surrounding the Cypress Hills, my father went up there for



*Above:—Cowboys still ride the range in the conventional manner.*

M. Kesterton

*Below:—It is sheep as well as cattle country. A shepherd and dogs, near Walsh.*

L. S. Russell





*In Cypress Hills Provincial Park.*

M. Kesterton

a few weeks of haying on a ranch, replacing the services of a fellow-homesteader who had been unable to keep his engagement. As a small boy, I first learned about the existence of the Cypress Hills from letters written to my mother during this period.

Later, when the whole family moved down to the homestead, 50 miles from the nearest town, 35 from the nearest railroad, the Cypress Hills continued to fascinate us. We drove up there for loads of logs, useful for fenceposts and for miscellaneous building around the farm. A neighbour occasionally went for a couple of weeks fishing to Elkwater Lake. Over cross-country range trails we rode up sometimes on the wagon gear, sometimes with horse and buggy, later by automobile. It was a constant source of satisfaction to know that when the prairie around

us was burned to a crisp, in summers so dry that wheatfields were a complete failure, when our wells were drying out, and the small shrubs in the coulée were withering, such an oasis existed only a few miles away. Four or five hours jog-trot by horse and buggy along the trail across the plains, up Manyberries Creek, down into Medicine Lodge coulée, up steep Sexton's Hill, and eventually we would climb to Charlie Mudie's ranch house of logs, set on the edge of a rustling grove of poplars, with a perennial spring of cool sweet water deep in the shadow of the aspens. From Charley Mudie's yard, at an elevation of over 4,700 feet, you could look southwest to the Sweet Grass Hills of Montana sixty miles away, and southeast to the Bearpaw Mountains, even farther. Spread out between the two was a

## THE CYPRESS HILLS

*Looking north over Elk-water Lake.*

National Museum

*Below:—Looking north on Medicine Lodge coulée.*

L. S. Russell



fascinating maze of flat-topped ridges, winding dry water courses, buttes and draws and gullies, incredibly sharp and clear in the prairie air. (I saw this view again in 1949: it is unsurpassed in all that region.) Down on the slopes of Medicine Lodge coulée there were spruce trees so large that boyish arms could not encircle them, and along the stream below there were beaver dams and cool beds of bergamot and fern. On the bench, wild cattle grazed the succulent grasses, and the stands of lodgepole pine were so heavy it was almost impossible to force one's way through them. There were abundant flowers strange to us, and new birds. The ranchers themselves were friendly and hospitable. An oasis indeed for the prairie boy.

*Cypress Hills from western end, looking northwest.*

National Museum





## Some Bird Fables

by DAN McCOWAN

**A**LTHOUGH Canada boasts of a large and varied bird population it is noteworthy that in this country but little attention is paid to fable and legend pertaining to the feathered kingdom. True, we make frequent use of the phrase, "A little bird told me", and there are many people who link the presence of magpies with forthcoming vital statistics of the neighbourhood, who are awed by the ominous croak of a raven and who are glad when a bird house on the gable end is tenanted by bluebirds. Otherwise, augury, a primitive form of divination based on behaviour of birds, plays no part in forecasting election results or crop yield in any of the Canadian provinces. We have perhaps grown too prosaic.

Scanning a list of native Canadian birds, also represented in Europe and around which fabulous tales have been woven, one might well give pride of place to the bittern. This lanky and furtive dweller in the marshes, often heard but seldom seen, has in lands afar formed subject for quaint notions and beliefs almost all of which are, to say the least, fanciful. For instance, this bird was for long believed to amplify vocal power enormously by thrusting and holding the long bill in the mud of the fen. In ancient writings there is frequent mention of the booming of the bittern. Chaucer spoke of bitterns bumbling in the mire but here in

Canada the lugubrious love song of these birds can hardly be described as booming nor as causing the marsh to quake.

Bitterns live chiefly on water bugs and beetles and on small minnows taken by stealth and by sudden swift spearing. Until recent times the incredible belief that in the dark hours of night these birds carried and made use of individual flash lights as aids to the capture of prey was common. In a book published in Boston in 1836 the author stated that "The bittern has power of emitting a light from its breast, equal to the light of a common torch, which in the night illuminates the water and enables the bird to discover its food". He added, "This has been confirmed by several observers of bird life, gentlemen of undoubted veracity, amongst them the proprietor of the Philadelphia Museum".

One can in fancy see the feathered fishermen stalking through the murky marshes, each one furnished not only with waders and a sharp spear but also equipped with a high-power spot light. The fireflies and glow worms must surely have been put completely in the shade.

On the heathery moorlands around my boyhood home in the Grampian Hills the long-billed curlew is yet fairly common. There it is known as the whaup and in certain areas of England as whimbrel and

*At top:—The bittern was, until fairly recently, believed to carry his own flash light, which he switched on when fishing at night time.*

D. McCowan



as the Seven Whistler. In many parts of Great Britain the mournful call of the curlew was regarded by superstitious people as betokening disaster—possibly in collieries or perhaps on the seaboard. The unearthly cries of these birds on a starless night in Scotland gained for them the grisly name of corpse-hounds. All of which, in this enlightened age, comes under the heading of Auld Wives Tales. Belief that the eerie sound made by these birds in the night presaged forthcoming calamity was however not confined to the British Isles—it penetrated into remote areas of the New World. Native Indians in Oregon were likewise greatly perturbed when curlews wailed overhead in the dark. They were confident that the sound was produced by restless spirits abroad in the upper air.

One of the most widespread and persistent myths regarding bird behaviour is that hummingbirds are confirmed hitch-hikers. These diminutive birds of passage are, in many quarters, believed to “thumb a ride” from Ecuador to Edmonton, and beyond, on the backs of northbound geese. It makes a pretty story but, alas, has no factual foundation. The geese come home again to interior Canada a full month ahead of the hummingbirds and there is no trustworthy evidence of any small bird having gained a free ride on the shoulders of a sturdy waterfowl.

The popular but mistaken notion that on long-distance journeys the wrens, the warblers and the hummingbirds secure transportation in this manner is by no means confined to North America. A misguided European writer even went so far as to state that, as the small birds lacked wing power to fly across the Mediterranean Sea, large carriers such as cranes, geese and storks were expressly created to ferry the tiny passengers across this wide expanse of water. On this side of the Atlantic, in neighbouring Montana, one of the grebes was known to Cree Indians as cranes-back from the belief held by people of this tribe that the “Hell-Divers”, as they are commonly called, habitually migrated as stow-



*Rufous hummingbird. Legend has it that, like the wren and warbler, the tiny hummingbird is a confirmed hitch-hiker who travels long distances on the backs of larger birds.*

D. McCowan

aways on the upper deck of the sand-hill crane.

The poet Gray, in his immortal elegy, wrote:

Save that from yonder ivy-mantled tower  
The moping owl doth to the moon complain.

Should owls complain it might well be at the treatment accorded them by poets generally. In all countries where it has found a home and in all ages the owl has wrongfully been given a bad name and denounced as a bird of evil omen. Spenser called the owl “a ghastlie bird”, Shakespeare made many references to its ill-boding tongue, Ovid called it an accursed and obscene fowl, foreboder of approaching woe. Yet, actually, there is no ground for belief that the owl is more melancholy in disposition than the skylark or that it is less cheerful than the chickadee. True, it is a nocturnal bird of prey and no songster, but for all one knows the owl may in daytime be light-hearted as a linnet and after sundown be as happy as the night is long.

That swans, when about to expire, break forth into song, is still a popular belief.

And now this pale swan in her watery nest  
Begins the sad dirge of her certain ending.



*Left:—In former days the wren was vigorously persecuted in some countries, for it was thought to be in league with the Devil. It is also said to have been greatly respected by the Druids and for that reason slaughtered by Christian missionaries.*

W. V. Crich

*Right:—The ptarmigan is found not only in the Canadian Rockies and the Highlands of Scotland but also in Japan; there it is known as the "thunder-bird" and its picture is hung in many farm houses as protection against lightning.*

D. McCowan

That makes a nice couplet but unfortunately the vocal organ of a swan is so formed that sustained melody is not possible and thus swan-song forms but a fanciful figure of speech. Eagles are said to improve long-distance sight by habitually gazing steadfastly at the sun but that too is a mistaken notion. Wrens, for some obscure reason, were formerly believed to be in league with the Devil and because of this in some countries, particularly in Ireland, these innocent little songsters were shamefully persecuted. Tradition has it that the wren was greatly respected by the Druids and that consequently wholesale slaughter of these birds was prompted by Christian missionaries.

In almost all parts of North America the native tribesmen believed that electrical storms were produced by enormous fowls of the air. Although no one had ever seen a member of the species, the thunder-bird, high

*Young horned owl. The much-maligned owl has long been regarded as a malevolent bird of evil omen.*

N. Morant





above the massive black clouds, was very real. It is interesting to note that the ptarmigan, equally at home in the Highlands of Scotland and in the Canadian Rockies, is also found on the mountain tops of Japan. There it is called *rai-cho*, "thunder-bird" and is held sacred to the God of Thunder. Pictures of ptarmigan are sometimes hung in Japanese farm houses as a charm against lightning.

In days of old and on the near approach of a severe electrical storm nervous people in rural England habitually sought refuge in the billowy depths of a feather bed. Birds were then believed to be immune from lightning stroke and consequently feathers were thought to provide insulation to fowls of the air and likewise to anyone recumbent on a downy mattress. Yet, strange to say, use of a pillow stuffed with pigeon feathers was considered baneful.

Once upon a time and indeed until little over a century ago the annual migration of birds remained a profound mystery to man-

kind. Even Gilbert White of Selborne, most eminent naturalist of his day, thought that swallows might possibly hibernate and, like frogs and toads, bury themselves temporarily in mud. Samuel Pepys, a most curious person, believed that on the approach of winter these birds submerged in lake or pond and there miraculously remained alive during the season of frost and snow. Even more incredible was the widespread belief that many large and powerful birds, cranes, swans, geese and the like, nesting in northern latitudes during summer and disappearing mysteriously in autumn, spent the winter on the moon.

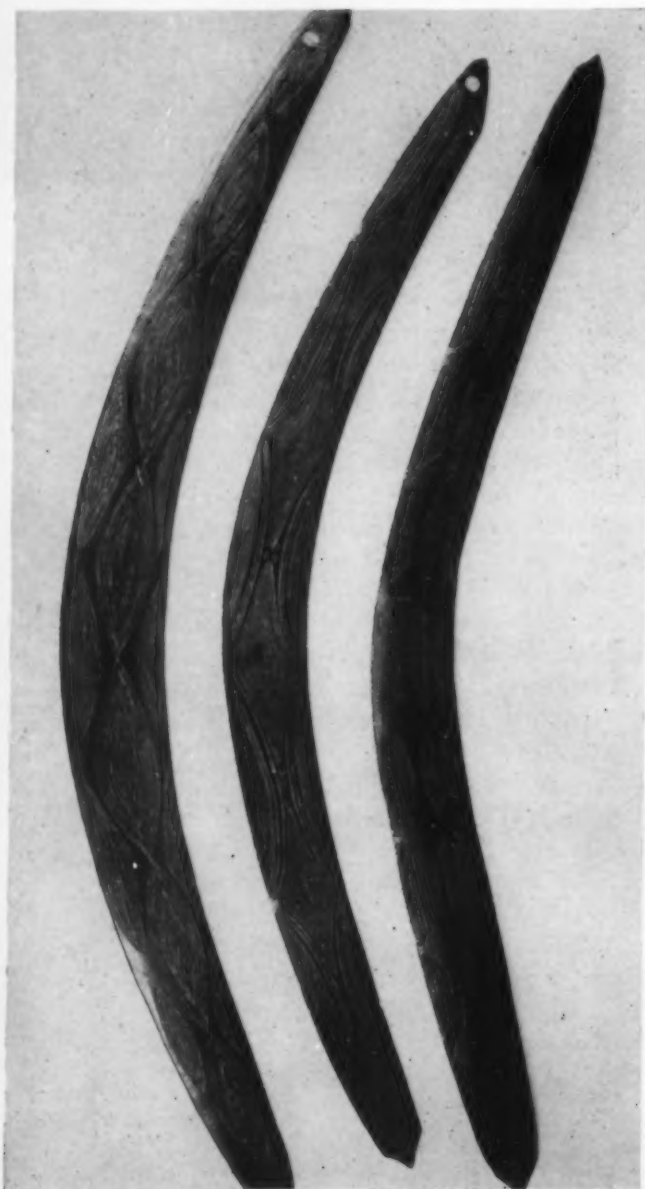
In this precise, and prosaic, age we scoff and laugh at the quaint avian beliefs of our forefathers. Nevertheless we continue to practise an ancient rite over a forked bone from the skeleton of a domestic fowl; this, in the fond hope that henceforth a goodly clutch of golden eggs from a figurative goose may, so to speak, enable us comfortably to feather our nest.



# Australian Aboriginal Art

by DAL STIVENS

**A**USTRALIAN aboriginal art, with its bold, naïve designs and gay colours, is enjoying a vogue with artists, architects and textile designers today. To the Australian Museum in Sydney come letters from all over the world seeking information about the decorative art of one of the world's most primitive people. The New York Natural History Museum is planning to exchange examples of Red Indian art for Australian aboriginal work and rock paintings.



The aborigines of Australia are among the oldest races in the world. Sir Arthur Keith thinks that they represent the type from which all modern races have sprung. Another distinguished anthropologist, Sir Grafton Elliot Smith, considers them the representatives of Aurignacian man — the first human beings of a definitely modern era to appear in Europe — responsible, apparently, for the extinction of their Neanderthaloid predecessors.

Anthropologists have given the Australian aborigines a distinctive name, Australoid, because they are obviously neither Negroid, Mongoloid nor European; they think that they originated somewhere in southern India and migrated from there to Ceylon, around to and down the Malay Peninsula to the East Indies and thence to Australia.

In Ceylon, Malaya and the East Indies there are pockets of Australoid people — descendants of the primitive nomads who made the great trek southward. This migration no doubt was spread over many centuries. They were food-gatherers and the search for fresh and better hunting grounds drove them on; at the same time, they were probably urged onward by pressure from peoples with a higher culture.

We do not know when the aborigines came to Australia. It is possible that they clashed with a darker-skinned race which was driven out of the continent into Tasmania. But no one knows definitely.

In 1788, when the first white settlement was established in Australia, it had probably about 300,000 inhabitants divided into 500 tribes, some of which were possibly

*Left:—Ornate fighting boomerangs (which don't return when thrown!) from western New South Wales and central Queensland; lightly incised on them are concentric diamond and oval line figures.*



*A totem stone, or churinga, of the Arunta tribe of central Australia; the totem is that of the black honey ant.*

only sub-tribes or a local division of large tribes. The number in a tribe averaged about 500. There were as many languages or distinct dialects as there were tribes. Professor Elkin of the Chair of Anthropology at Sydney University thinks there was possibly a common origin of the various languages; the same words and sounds appear in many of them but often the meanings differ.

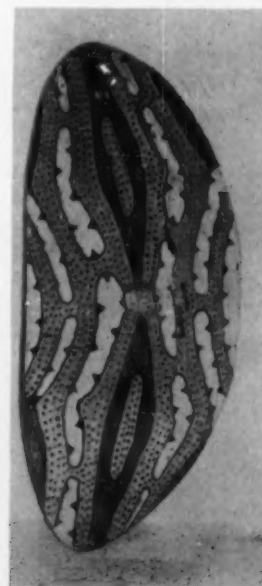
Under the impact of 158 years of white settlement, the total number of aborigines has decreased; in their wild state they remain only in the northern and central parts of Australia where, under a system of government protection, they exist much as they did centuries ago, living off the land and practising their rites.

Australian aboriginal art is religious art, never being secular in the sense that ours is. For instance, a white man might decorate a whip handle or a saddle, but he would not believe that any of the designs he carved would result in a better whip or saddle. But

*This churinga (also of the Arunta tribe) is that of the bulb of the common nut-grass plant (Cyperus rotundus).*



*Right and below:—Gaily painted aboriginal shields from northeastern Queensland.*



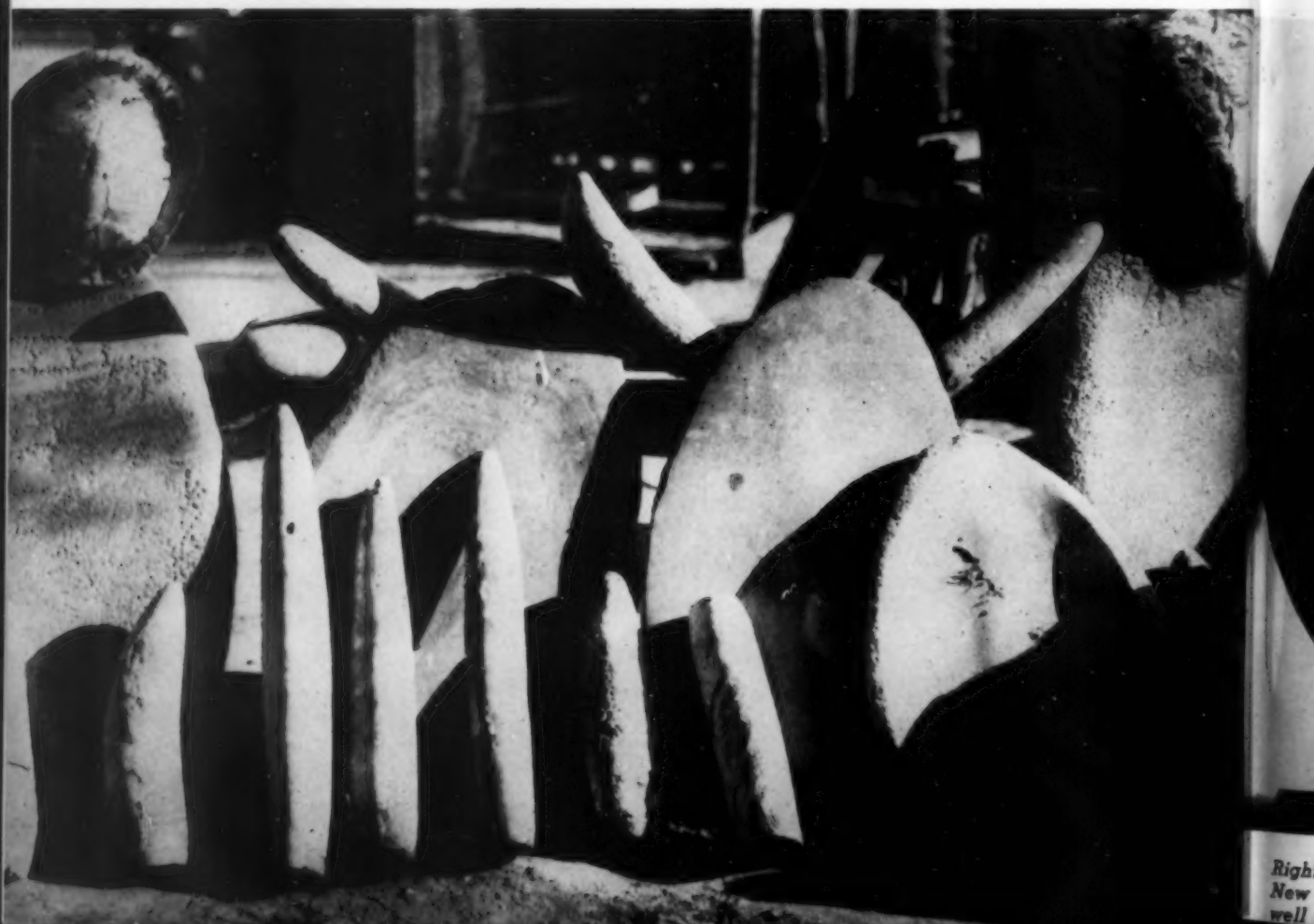


when the Australian aborigine carves symbols on a spear or boomerang he is confident that he is not merely making the spear or boomerang more pleasing but also more effective. He believes that the designs he paints or carves on the boomerang or spear, and the sacred song he chants while at work, will endow it with some magical power.

Professor Elkin says that he showed a *churinga* (a sacred object — also written *tjurunga*) to some natives; they praised its "pretty pattern" and then immediately broke into a religious chant in a spirit of deep reverence. This was the same sacred song they sang when carving and painting their own *churinga*. Various tribes have

*Left:—These parrying shields show complex incised designs which were a feature of the art of the aboriginal tribes that lived in south-eastern Australia.*

*Below:—Aboriginal relics found in western New South Wales. The large oval stones were used for grinding seeds, but nothing is known about the purpose served by the cylindro-conical and corneate shaped stones.*



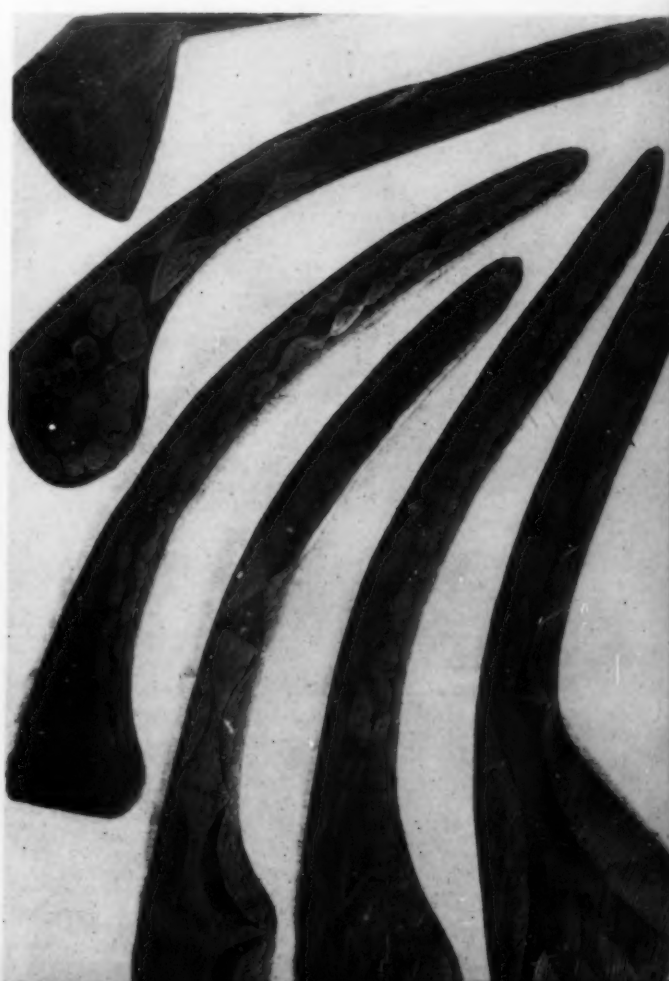


different names for the *churinga* — a term used by the Aranda tribe, and also applied to myths and rites.

Because the aborigines' art is a religious art it is also a restricted and traditional art. The success of a religious ritual (they believed) depends on its being carried out faithfully, while the success of a shield depends on its being carved and painted with the correct symbols. But working within these restrictions they achieve a rare beauty, possessing a fine appreciation of form and design: for proof, look at the graceful curves and designs of the shields and clubs in the illustrations accompanying this article.

*Right:—A pleasing harmony is provided by two clubs (with patterns cut in high relief) from western New South Wales and a hooked boomerang of the Warramunga tribe of north Australia; this boomerang is a fighting weapon used to hook an opponent's shield away from his body.*

*Below:—The symmetrical curves and neat designs of southeastern Australian shields are harmoniously combined in these examples from the Lachlan and Murrumbidgee Rivers.*



*Right:—Gracefully shaped lil-lil clubs from western New South Wales; the lil-lil is a bladed fighting club well suited for shallow carving.*

The religion of the Australian aborigines is a fascinating ritual which Professor Elkin describes as being "rich in content, noble in its search for light, knowledge and life, and historically connected with the great mystery cults of the world — primitive and civilized". It is far too intricate and complex a subject to be dealt with here other than in a very general fashion. Almost all the aboriginal tribes believe in reincarnation, thinking they are the descendants of spirit ancestors who once lived on earth.

Aboriginal mythology is full of stories of the wanderings of the ancestors on earth; they had various adventures and often assumed the shapes of birds, animals, reptiles, plants, trees and rocks. When they went back into the earth or into the sky, they left spirit children behind. These spirit children were left with a *churinga* (sacred object), and lay waiting to be reincarnated in aboriginal children and in animals and birds. Thus, a native woman may pass a rock where a kangaroo ancestor has gone into the earth, leaving a *churinga* and spirit children behind him, and when she is pregnant this woman will believe that her child will be a kangaroo spirit; it will belong to the kangaroo totem, but a brother or sister may belong to an emu totem. When an aborigine looks at a *churinga* with its painted symbols he believes that he is looking at his spirit ancestor. This (in very sketchy fashion) is the spiritual significance of the various designs in Australian native art.

There are five rough classifications of aboriginal art:

- (1) Painting on weapons, utensils, sacred objects, bark and the human body, on rocks and caves.
- (2) Carving and incising on weapons and utensils, rocks (grooving and hammer-dressing), trees and sacred objects.
- (3) Ground models.
- (4) Ceremonial.
- (5) Personal ornaments.

The aborigines use few materials for their religious art. Painting is done with red and yellow ochres, white pipe-clay and charcoal. Emu, kangaroo, goanna and fish fats are

often mixed with the pigments to serve as adhesives, human blood being employed for this purpose during sacred ceremonies. The tools used are chipped and ground-edge stone implements, bone, teeth and shell cutters, gravers, scrapers and rasps.

The aborigines decorate most of their effects but their most complex patterns are applied to the *churinga*. These are usually oval or circular slabs of wood or stone, flattened or slightly convex, and generally coated with red ochre. Their function in the totemic and religious life of the tribes is that of providing a home for the totem spirit (such as a kangaroo) of their owner. Some *churinga* extend up to six feet in length and have designs incised all over one side. Others are smaller and are twirled on a cord — white men have called these "bull-roarers" from the sound they make.

Only those who have been carefully initiated may look at the *churinga*, which are usually kept in sacred storehouses and are handled with the deepest reverence. "I know of nothing more impressive," Professor Elkin wrote in his book, *The Australian Aborigines*, "than to see a group of aborigines sitting in a secret ground contemplating their sacred symbols and chanting the song versions of the myths appertaining to them."

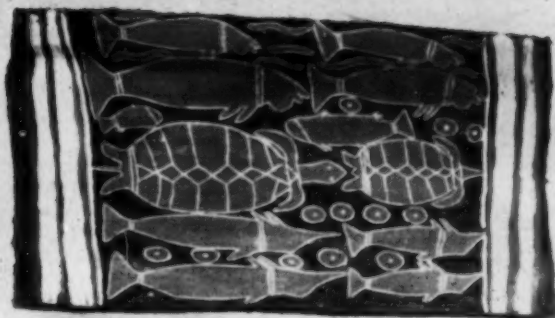
Designs used and types of objects decorated vary widely in the different parts of Australia. F. D. McCarthy, anthropologist at the Australian Museum, Sydney, has classified six areas which are broadly distinctive from each other.

Some of the motifs used include drawings of animals, birds, reptiles; concentric circles; "U-within-U" figures; sets of parallel, straight, curved and spiral lines; rows and panels of dots; tracks of birds and animals; concentric diamonds; and zig-zag lines. The same symbol may be used in various areas but have different meanings; thus, a sinuous line may represent a snake, or the track taken by an ancestor when on earth. The curved "U-within-U" figures represent men sitting down — one "U" to each man.

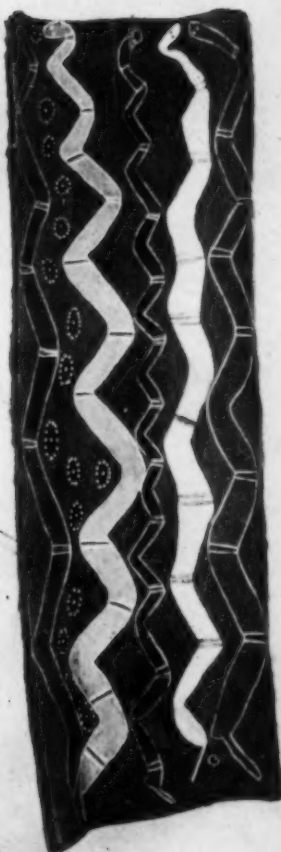
According to Baldwin Spencer and F. J. Gillen, who made a study of the Central

Right, top:—Bark paintings, the work of aborigines in eastern Arnhem Land.

Right:—The painted skulls of ancestors of eastern Arnhem Land aborigines.



BARK PAINTINGS  
EASTERN ARTHURIAN LAND



PAINTED GRAVE POST  
BATHURST AND MELVILLE ISLANDS







Aboriginal rock carvings at Moolwingee, one hundred miles north of Broken Hill, New South Wales.

Australian Arunta tribe, the spirals and concentric circles usually represent the principal feature of the myth portrayed, such as the spiritual ancestor, the places where he camped, where he came out or entered the ground, and so forth. On one *churinga* they may stand for a frog; on others a tree, a waterhole or other totem.

Among the drawings of the aborigines are negative imprints of hands; the aborigine artist presses the palm of his hand flat against the surface of a rock or slab of bark and squirts around the outline from a mouthful of pipe-clay or ochre. When the hand is taken away its outline is silhouetted in the bright patch of red or yellow ochre or white pipe-clay.

Baldwin Spencer in his book, *Wanderings in Wild Australia*, has provided this word picture of a native artist at work:

"Today I found a native who, apparently, had nothing better to do than sit quietly in the camp, evidently enjoying himself, drawing a fish on a piece of stringy bark about two feet long and a foot broad. His painting materials were white pipe-clay and two shades of red ochre, the lighter made by mixing white pipe-clay with pure ochre, and a primitive but quite effective paint-brush, made out of a short stick, six or eight inches long, frayed out with his teeth and then pressed out so as to form a little disc, shaped like a minute, old-fashioned chimney-sweeper's brush. It was most effective, and he held

it just like a civilized artist sometimes holds his brush, or pencil, with the handle between the thumb, then crossing the palm and out below the little finger, so that all four fingertips rested on it, or sometimes it passed out of the hand above the little finger. Held in this way, he did line work, often very fine and regular."

The work of these primitive Stone-Age artists has a strange fascination for Atomic-Age artists, who, though unable to appreciate fully its religious significance, are struck by its bold simplicity and verve. Some of the apparently casually drawn figures look childish — but, here's the test;

try to reproduce something yourself that is as good in its way and says as much with as few lines. In its own sphere, aboriginal art has the same innocent vision as Matisse's work; but the first has it involuntarily whereas the great Frenchman acquired it after a lifetime of conscious effort. Among leading Australian artists who have fallen under the spell of the naïvety and freshness of aboriginal art is Maud Sherwood. In her recent landscapes and studies of native flowers she has applied what might be termed the aboriginal palette of colours together with aboriginal motifs to contemporary subjects.

*Rock carvings at Euro Tank, a dam fifty-six miles northeast of Broken Hill.*





## Canadian Voyageurs

by S. C. ELLS

Drawings by the author.

Through the broad-timbered bottom-lands, up winding  
white-walled vales,  
And over wind-swept uplands, lashed by the winter  
gales,  
Wound the white leagues of trap-lines; gay flecks of  
crimson stain  
Marked Life's grim rendezvous with Death on hill or  
drifted plain;  
Thro' the long night of northern lands, under the  
moon's cold glare,  
Men pitted wits with Wood-Folk, with trap and cun-  
ning snare;  
In wood or meagre coppice before brush shelters rude,  
The flaming camp-fires lit the gloom of silent solitude,  
And floundering down the winding trails, thro' murk  
of driven snow,  
In bitter cold of ghostly world the panting train-dogs go.

Now the long night is ended, now the long day begun,  
Down valley slopes to rivers broad the yelping dog-  
trains come;  
Behind lie silent trap-lines; the long wet trail before  
Calls to men of the tracking-line, of pole and ponderous  
oar;  
By weary leagues of foaming stream, portage and inland  
seas,  
Deep-laden craft will forge along — fabulous argosies;  
For heavy-handed trader and hardy voyageur  
Are bringing Northland's tribute to Beauty, Wealth  
and Power.

**T**HE STORY of the fur trade in Canada, more especially during the eighteenth century and early years of the nineteenth century, constitutes a story of epic deeds by daring and indomitable men. On the vast stage of an uncharted wilderness these men strove with almost fanatical zeal to conquer half a continent. In the ultimate analysis, the successful outcome of their efforts must be attributed in no small measure to Canadian voyageurs.

### Development of the Fur Trade

Subsequent to 1540, and prior to the British conquest of Canada, the fur trade within areas to the east of the Great Lakes had rested in the hands of various French companies and monopolies, but a number of free-traders from Montreal and certain points adjacent to the Great Lakes had penetrated areas tributary to the Saskatchewan

*Top:—At Rendezvous Lake on la Loche portage, where crews from the north met crews from the east, the men fought, rollicked and sang.*



valley. Nevertheless, to the west, northwest and north of the Great Lakes, activities of the "Governor and Company of Adventurers of England trading into Hudson's Bay"—the Hudson's Bay Company of today and one of the world's great pioneering organizations—had represented the dominating influence subsequent to the granting of its Charter in 1670.

Under the terms of the Charter the Company had been granted a trading monopoly and certain other rights throughout those prolific and almost limitless fur-bearing areas which drain into Hudson Bay. Following the conquest, however, this apparently assured monopoly in the *Pays d'en Haut* was challenged by increasing numbers of aggressive (and frequently reckless and unscrupulous) free-traders from Lower Canada, New York, Albany and other bases in the United States. By 1787, following negotiations which had extended over a period of some fifteen years, these new comers had joined forces with certain other Anglo-American men of substance and finally combined with the "X.Y. Company" in 1805 to complete the formation of the North West Company—the "Master Pedlars" of the west. Over a period of many years, as "Lords of the Lakes and Forests", these virile men swept across their newly acquired empire to the west and northwest, and with (at times) upwards of two thousand employees, eventually extended their operations westward across the Rocky Mountains to the Pacific Ocean and northward as far as the shores of the "Frozen Sea".

To the native tribes the newcomers brought muskets, copper kettles, tawdry goods and ample supplies of rum, the "corner-stone" of their trade; to the Company of Adventurers lawless intimidation and not infrequently bitter and bloody rivalry brought near ruin. For, in the complete absence of law enforcement, throughout vast areas of the west and northwest might was still right. Moreover, owing to the depletion of fur-bearers which inevitably followed ever-increasing demands for the white man's goods (either in the form of barter or as increasingly costly "gifts") both companies

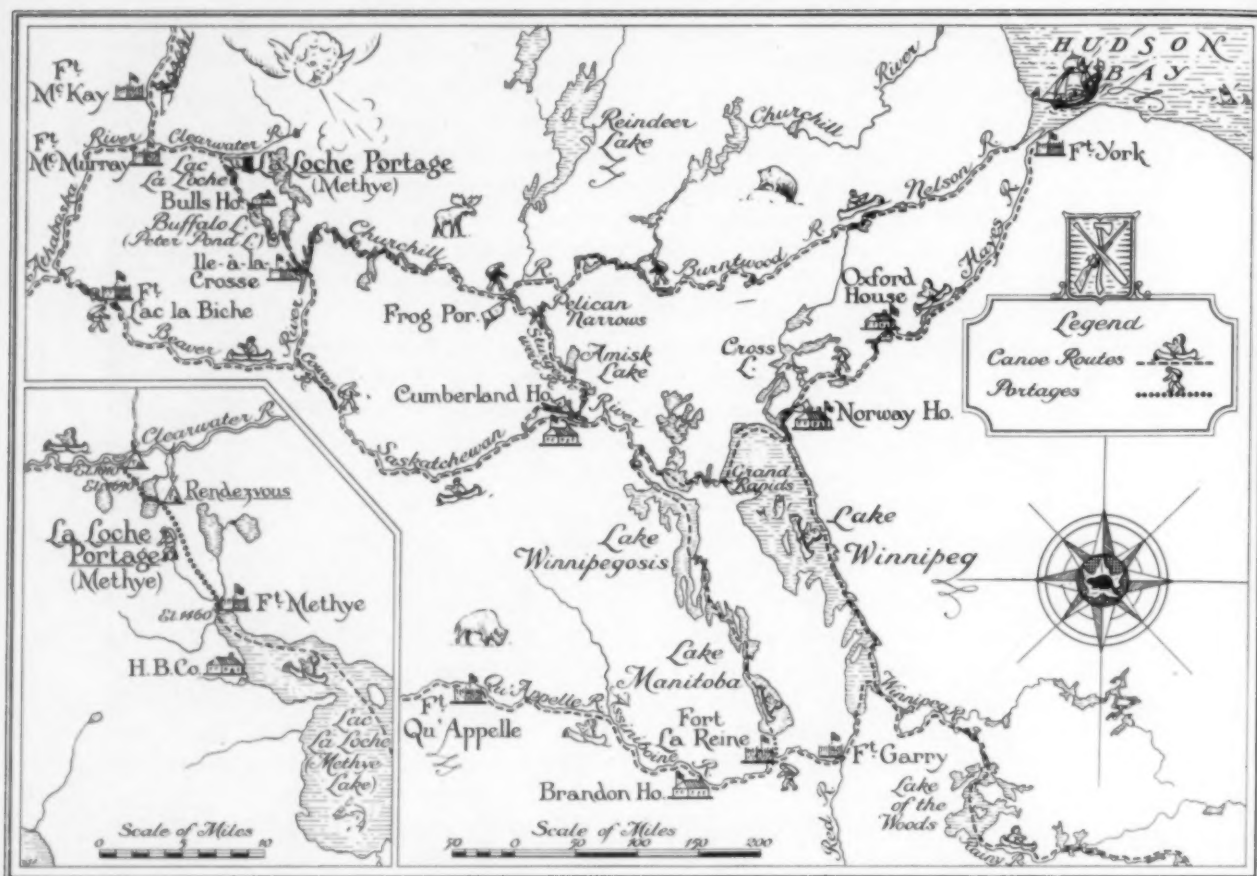
soon experienced the results of uneconomical competition. Owing in part to excessive costs of North West Company supplies from Montreal, but chiefly to fair dealing, strict discipline, courtesy and sound financial methods on the part of the Hudson's Bay Company, only the latter organization survived a contest in which brute force was all too often the decisive factor.

#### Trade Routes

For over 150 years the Mackenzie River has been the *grande route* of the North. With a drainage basin of more than one-fifth the area of Canada, this river is destined to play an increasingly important role in the years to come. For today, as perhaps never before, men are inclined to hear the call of the North. Fleets of heavy tugs and great steel barges plow northern waters; aeroplanes wing across awakening northern solitudes; and fleets of freighting trucks speed over roads where, but a few short years ago, yelping dog-trains dragged toboggans along dim and tortuous snow trails.

Details with respect to early transportation are not always readily available; the following brief review of one of its most stirring chapters (that dealing with transportation over the Mackenzie—Methye [la Loche]—York route via Cumberland House prior to 1885) is therefore of interest.

As ultimately adopted, following the abandonment of the Churchill River below Frog portage, the water route between York Factory and Smith portage was approximately 1,800 miles long. This route followed the Hayes and Nelson Rivers, together with certain intermediate lakes, to Norway House, and thence led westward by way of Cumberland House, Frog portage, Churchill River, Ile-à-la-Crosse, Peter Pond and la Loche Lakes, and Clearwater, Athabaska and Slave Rivers. East of Norway House the number of portages depended on the water level and the extent to which boats were loaded. It appears, however, that the maximum number of portages faced by boats proceeding up-stream did not exceed thirty-four and many of these were relatively short carries



Canadian Geographical Journal map

or *décharges*. The longest (the Whitefall immediately east of Robinson Lake) was approximately 1,300 yards in length. Portages necessitated when proceeding downstream were much fewer in number.

Of some forty-one portages between Norway House and the lower Slave River, the most important were at Grand Rapids (3.3 miles), Methye (la Loche) (12.5 miles) and Smith's Landing (16 miles). On Clearwater River four portages have an aggregate length of 3.3 miles. Below the mouth of Slave River the route lay across the western end of Great Slave Lake and thence down the Mackenzie River. Although the time required to travel along various sections of the above route depended on ice conditions, water level and weather, the trip from York to Methye portage usually occupied from sixty to seventy-five days. In June and July, 1854, and again in June and July, 1856, in spite of ice and

adverse weather conditions, Chief Factor James Anderson ascended from Simpson to Methye portage (1,000 miles) with loaded canoes in approximately thirty-three days. On each occasion the return trip was completed in approximately twenty-five days. It appears, however, that the up-river trip by loaded York boats usually occupied some forty-five days.

#### Trading Posts

Among the many trading posts on or immediately adjacent to the above route are the following, with dates of establishment (regarding some of which authorities differ) and approximate mileages from York Factory. (North West Company posts are indicated by the letters "N.W."; others were Hudson's Bay Company posts): York Factory (1670); Oxford Ho. (1798, 233 m.); Norway Ho. (1817, 451 m.); Fort Gibraltar

(N.W. 1809, 756 m.), succeeded by first Fort Garry (1821), lower Fort Garry (1831) and upper Fort Garry (1835); Cumberland Ho. (N.W. 1768 and 1793, H.B. 1774, 755 m.); Ile-à-la-Crosse (N.W. 1776-77, H.B. 1799, 1,290 m.); Methye Lake Depot (1803, 1,395 m.); Fort of the Forks, on west side Athabaska River and opposite present site of McMurray (N.W. 1790, 1,493 m.); McMurray (1875, 1,493 m.); Berens Ho., at Pierre au Calumet on east side of Athabaska (1816, 1,551 m.); Old Establishment on Athabaska River and 30 miles south of the lake (N.W. 1776, 1,630 m.); Chipewyan, first site on south shore of Lake Athabaska near mouth of river (N.W. 1789, 1,650 m.), present site (N.W. 1805, 1,680 m.); Ft. Wedderburn (1815, 1,680 m.); Smith (1874, 1,800 m.); Hay River (first post 1845, second post 1868, 2,075 m.); Ft. Providence (present site 1868, 2,153 m.); Ft. Simpson, formerly Fort of the Forks (N.W. 1820, H.B. 1821, 2,303 m.); Ft. Wrigley (1880, 2,461 m.); Ft. Norman (N.W. 1810, H.B. on Bear River, 1821, at present site 1851, 2,613 m.); Ft. Good Hope (N.W. and H.B. 1804, 2,786 m.); Arctic Red River (1891, 3,000 m.); Ft. McPherson (1840, 3,054 m.); and Aklavik (1912, 3,154 m.). These and other establishments were outposts of a seemingly inexhaustible fur empire; to them (with the exception of Aklavik) countless trappers' trails wound down through an unmapped wilderness bordering more than 3,000 miles of uncharted waterways. And over these trails for many years flowed the hard-won, almost incredible tribute from the El Dorado of the North. Through the bitter cold of long winter months men and dogs met the grim challenge of countless miles of trap-lines, while women drew glossy pelts from the fear-some dripping carcasses of trapped animals hanging in moss-chinked hovel or smoke-stained tipi.

#### Transportation Problems

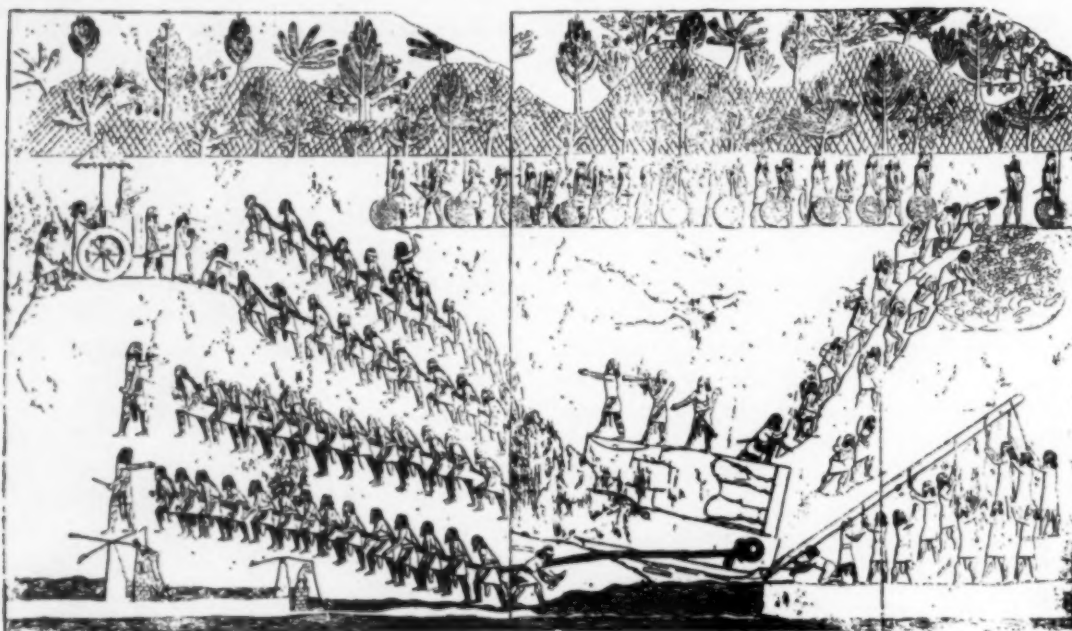
The great debt which Canada owes to the bravery, endurance and initiative of the early fur-traders is not always remembered. Far from established bases and facing the

constant threat of privation, of disease and of hideous death at the hands of hostile tribes, for upwards of two centuries these undaunted men pressed ever forward the exploration of vast "white spaces" on the map, blazed new trails and, by land and water, developed new transportation routes through the west and north. These were the men who dictated the course of events in a new land and, consciously or unconsciously, laid the foundation of settlement in western and northwestern Canada.



Canadian Geographical Journal map





*Tracking lines and individual 'tugs' used by the Egyptians on land and by water thousands of years ago were identical with those employed on the rivers of Northern Canada.*

In the complex and all-important field of transportation (in which upwards of 1,500 Hudson's Bay Company employees were at times engaged) careful organization and the feeding of boat and canoe crews, especially those returning to their bases, required constant expert attention. With the passing years increases in transportation costs were inevitable. In part such increases were due to unavoidable "leakages" and to pilfering by *engagés*; and, during later years, to the deterioration of morale, to breakages, and to the expense of maintaining adequate reserves of trade goods. Other handicaps included a relatively short transportation season which was frequently accentuated by low-water conditions. To some extent the above difficulties were met by improved boat construction, improved technique in packaging trade goods and furs, by encouraging wherever possible the raising of root crops at trading posts and by the establishment of food depots at strategic points.

#### **The Boat Crews**

Full tribute must be paid to the faithful Orkneymen of the Hudson's Bay Company during the earlier days and to the *esprit de*

*corps* of the *engagés* by whom they were followed. For many years prior to 1840 it was, to a great extent, the colourful French Canadian voyageurs and their descendants, the half-Indian *Métis*—and, subsequent to 1840, Indians of the Iroquois and other tribes—that manned the brigades of water-borne craft which, in fair weather and in foul, converged from the west and the north with their cargoes of furs, and from the south and the east with their cargoes of trade goods from far across the sea. Under heavy-handed traders, aspiring apprentices, and native guides who were in command of all boats (with the exception of the Factor's) while under way, and ever spurred on by keen rivalry between individuals or boat crews, these masters of sweep and paddle, tracking line and pole, travelled fast and hard by York boat, canoe and portage. Less than a hundred years ago it was not unusual for boats and canoes to start at 2 a.m., short stops being made for breakfast at 8 a.m. and for lunch at 2 p.m. It was the rule rather than the exception to travel until 10 or 11 p.m., when crews cooked their food as best they could and rested for a while.

Indeed it was largely on their superb skill and almost incredible endurance, at times carried well-nigh to the point of fanaticism, that operations of the fur trade rested.

#### Types of Craft Used

Prior to Union in 1821, the North West Company had favoured bark canoes—in the east the 36-foot *canot du maître* with its crew of sixteen to eighteen men and its load capacity of five tons, and in the west the 24-foot *canot du nord* with its crew of eight or nine men. Wherever possible, however, the Hudson's Bay Company had favoured the use of wooden boats, and although shallow-draft scows and *bateaux* were occasionally used in shoal waters, York boats (at times referred to as "inland boats") eventually replaced canoes. The first of these was launched on the Saskatchewan in 1788, while their use became general on the York-Methye section in 1797, and on the Athabaska-Mackenzie section in 1823. These

boats were originally modelled on the Viking type of galley, but the subsequent trend of construction, until finally standardized in 1833, was toward the lines of Scotch fishing craft. York boats were sufficiently light to be moved over portages on rollers, strong enough to negotiate the rough water of heavy rapids, sufficiently seaworthy to navigate large lakes, and had a useful life of from three to four years. Built in two lengths of 28 feet and 40 feet, they had selected spruce,  $1\frac{1}{4}$  inches thick, as planking and, when available, oak or tamarack for keel, stern and stem pieces. The principal boat-building centres were at Red River, Norway House and Edmonton House. Chiefly owing to the price of lumber, cost (1858) ranged from £20 to £25 per boat. Draft rarely exceeded two and a half feet when the boats were loaded, but, although they were strongly built, breakages, especially when overloaded, were not uncommon in rock-strewn waters and on rocky shores. Consequently a well-

*York boats were hauled over portages with the aid of rollers, tracking lines and man-power.*





The last man on the tracking line was the 'wheeler'; his duty was, primarily, to hold the line inshore.

equipped tool-box was essential. Other equipment included a long steering sweep and a rudder, twenty-foot rowing oars (for which thole pins were staggered alternately along gunwales), a tracking line, a mast and a square sail. The mast when not stepped 'midships, was secured outboard along a gunwale. In addition to a steersman and a bowsman, for whom small platforms were provided, the larger boats carried from six to eight middlemen who rowed or tracked. Usually three, and not more than four, rowing benches were provided for an equal number of men; the remainder disposing themselves on packages and bales. Owing to the length of the rowing sweeps, and in order to secure increased leverage, the middlemen rowed from the far side of the boat, at times standing throughout the length of stroke or, alternatively, standing only at the beginning of the stroke. When boats were fitted with three rowing benches, the mast was stepped through the 'midship bench, the remaining two benches being equally spaced between that bench and the bow and stern.

#### Transportation Rates

Reflecting rates of wages and transportation charges on York boats, the following general data, which remained fairly constant between 1831 and 1851, are of interest. By standing regulation, lading of individual boats was not less than seventy "pieces" of approximately ninety pounds each, exclusive of passengers and their belongings. Rates were quoted in pounds and shillings sterling, but have here been equated in dollars on the basis of one pound being equivalent to approximately \$5.

Section of Route	Per Piece	Per Ton
York Factory to Norway Ho. (up-stream).....	\$ 3.50	\$ 78.00
York Factory to Red River.....	4 50	100.00
Red River to Norway Ho.....	.25	4.40
Norway Ho. to York Factory (down-stream).....	1.50	33.30
York Factory to Ile-à-la-Crosse .....	7.50	160.60
York Factory to Athabaska District .....	10.00	222.20
York Factory to Mackenzie River..	12.50	277.70

In 1851, yearly rates of pay on the Mackenzie River transport were approximately £27 for steersmen, £25 for bowsmen and £22 for middlemen, while guides received approximately £5 more than steersmen. At



times special rates were also paid per trip; for example, one hundred skins valued at fifty cents each were paid for a trip from Simpson to la Loche (a distance of 1,000 miles) and return. Indians received approximately £5 for the summer season. When travelling, in addition to wages, the men were provided with rations which consisted essentially of pemmican, dried buffalo meat (until about 1878) and tea; they also received moccasins (or hide shoes), tobacco and clay pipes. The above ration was supplemented when possible by fish, ducks, geese, rabbits and big game. It may be noted that it was not unusual for a tracker to wear out three pairs of moccasins in a single day.

Reference might be made here to freighting, of more recent date but of comparative interest, on the Liard and Fort Nelson Rivers where water conditions favoured the use of shallow-draft scows rather than of York boats. On these streams, prior to the advent of the seventy-foot stern-wheeler *Liard River* in 1919, crews of twenty, working in relays of ten men each, tracked eleven-ton scows the 350 miles from Simpson to Fort Nelson in approximately thirty days. Wages for the round trip were \$75 for steersmen, \$60 for bowsmen and \$50 for other crewmen. In addition to rations and moccasins, a bonus of \$7.50 was received for each moose shot.

#### The Fur Brigades

Each year, prior to the advent of steam, there was usually a large number of brigades on various land and water routes, and each of these brigades might include a number of sections—scores of pack-horses, or horse-drawn sledges or from two to many boats or canoes—and whether travelling by land or water they were designated by their points of destination. Thus brigades proceeding from Norway House to Methye portage were known as Methye brigades, and similarly there were Saskatchewan brigades, Athabaska brigades, Mackenzie River brigades, and many others.

Prior to the establishment of a post at Aklavik (1912), McPherson was the most northerly establishment of the Hudson's Bay

Company on the Mackenzie River system. This post, which for many years received furs from one or more other posts in the Yukon valley by way of the Porcupine, Bell and Rat Rivers, was the point of departure of a brigade which usually overtook the brigade from Simpson at or near Smith portage. Before the brigade from Simpson set out for Methye portage, however, and as soon as ice conditions permitted, it was customary for one boat or more to proceed 480 miles down-river to Good Hope and to return with bales of fur which had accumulated at that post.

#### Tracking Hazards

On the Mackenzie-Methye section it was customary for trackers to work in two relays (one hour on and one hour off) from 4 a.m. until 6 p.m. Under favourable conditions—as, for example, when canoes were used for special trips—four relays were sometimes used, and at times this resulted in practically continuous travel throughout the twenty-four hours. On certain sections of rivers and lakes traversed tracking along gravelly or boulder-strewn beaches presented no really serious difficulty; along other sections where men fought their way grimly along rough shores, often through tangled overhanging brush and knee-deep in mud or waist-deep in water, only the strongest could long endure the ceaseless torment of myriads of flies and the harassing and heavy work.

The average flow of the Mackenzie River varies from one and a half to three miles per hour. At a number of points, however, as, for example, at Sans Sault fifty miles above Good Hope, at Green Rapids some ten miles above Simpson, and again immediately above Providence, the current at times reaches a speed of eight to twelve miles per hour. At the above and certain other points, true rapids develop at some stages of water. At the Ramparts, immediately above Good Hope, the river narrows to some 500 yards and runs with a five- to seven-mile current between cliffs which for the most part rise sheer from the water's edge to heights of 50 to 200 feet. Under

such conditions tracking beaches were rarely available, and with their tracking line secured to the boat's mast-head, trackers worked their way along the edges of cliffs high above the water as best they could. Where the water was unusually fast, individual crews were at times supplemented by crews from other boats. Indeed, on one occasion immediately below Grand Rapids on the Athabaska River, the writer saw the normal scow crew of eight to ten men increased to not less than eighty, but even these were unable to hold the scow against the current. At the sixteen-mile Smith portage, prior to the advent of carts and draft animals in 1886, goods were man-packed. Fair winds which allowed the use of sails on lakes or on "long views" of rivers, brought welcome relief to toiling crews. Between McMurray and Methye portage, a distance of some eighty-five miles, the current averages from two to three miles per hour, while four portages have an aggregate length of just over three miles. Approximately four miles from the northern end of the portage there is a small body of water which, at the suggestion of the writer, has been named *Rendezvous Lake*. It was at the southern end of this lake that, over a period of many years, voyageurs from the Athabaska-Mackenzie basin exchanged their cargoes of furs for cargoes of trade goods brought by Hudson's Bay Company men from York Factory or by North West Company men from Montreal.

#### **Methye Portage\***

The Methye (la Loche) portage was commonly referred to as the "long portage". At one time such was its fame that voyageurs who had plodded across its winding trail could proudly exclaim, "*Je suis un homme*". It is unfortunate that there have appeared, at times, inaccurate statements regarding this portage—such as the following by a Canadian historian: "Lake la Loche is only a few miles from the height-of-land, a high rocky ridge dividing the waters which flow into Hudson Bay from those which find their way into the Arctic Ocean. After leaving the lake, the way lay up a small stream for about a mile and a half, and canoes and their

lading had to be carried for a distance of thirteen miles over extremely difficult ground to Clearwater River, a tributary of the Athabaska."

Actually, apart from an abrupt rise from the floor of Clearwater valley, the trail presented no difficulties and was ultimately widened to permit haulage by ox-drawn carts. The terrain itself is dry and consists for the most part of low and gently rolling sandy ridges. Trail gradients are very light and there is no "high rocky ridge". From a point on the northern shore of la Loche Lake a stream was at one time navigable by small craft for a distance of approximately half a mile. This afforded water transportation to the site of Methye Lake Depot which was established by the H.B.C. in 1803. The Depot comprised three warehouses and a small dwelling house, and was the southern terminus of the portage proper.

It appears that at one time the northern expansion of what is now known as la Loche Lake was referred to as Methye Lake, while only the southern expansion was known as la Loche Lake. Although some trading was carried on at the Depot referred to above, it was not until 1853 that an official trading post was established by the Hudson's Bay Company on the western shore of the lake, some three miles from the mouth of the creek which led to the Depot. A trading post originally established by Revillon Frères on the eastern shore of the lake, was subsequently acquired by the H.B.C. and in 1936 that company's original post on the western shore was abandoned. Through the kindness of Mr. J. S. Blackhall, H.B.C. Manager at Portage la Loche post, the above statements have been confirmed by Baptiste Fontaine, the last of the old-timers of earlier days. Although now chiefly of historical interest (but reflecting something of the atmosphere of the days of the famous voyageurs), the following further brief reference appears to be appropriate.

In A.D. 1778 the Pedlar, Peter Pond (soldier, trader, explorer and the first man to draft a chart of the Athabaska-Mackenzie basin), recognized the strategic importance

\*See "Portage la Loche" by S. C. Ellis, Canadian Geographical Journal, March 1936.

of the portage route across the Arctic divide between la Loche Lake and Clearwater River. Thereafter, for more than a hundred years, this portage stood as a focal point for voyageurs from the north and from the south. From it also were estimated distances to many points in the fur empire of the North.

**"A Mighty Race that is Gone"**

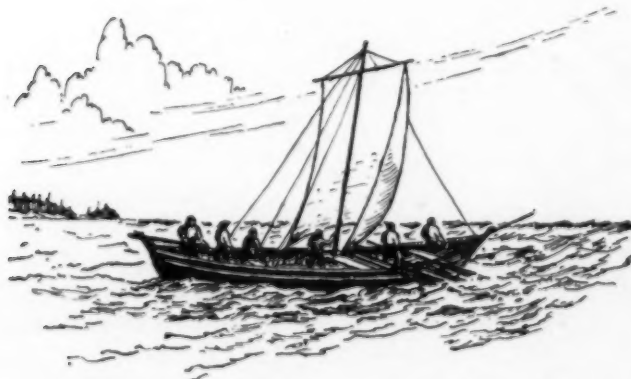
The glory of Methye portage has now departed; but ghosts of its past live on. In fancy one may still see a canoe, heavily laden with trap-line gear, creeping slowly up a lonely forest stream; the half-buried roof of a rude cabin with faint pennon of blue rising against the black wall of forest; a weary trapper fighting his way through a blinding blizzard, breaking trail through the deep snows and followed by panting train-dogs. And ever in the background, grim and primitive, hover Life and Death: the young, born under almost incredible conditions in order that

some day they too may play their part in the struggle for existence; the old, hovering closer and closer over smoky fires; and, ever present, the sinister spectre of killing cold.

Far away, in warehouse or steam-heated office, small groups of men passed sensitive fingers over glossy furs, pored over documents, dictated fashions. And the results of their decisions were felt in the remotest parts of the Great White North. From noisome hovel to luxurious salon, the way is long and devious.

Yet in the North the joy of life still survives in the thrilling exhilaration of the hunt, in the brutal satisfaction of the kill, in the fascinating game of pitting human cunning against that of the Wood Folk in their native haunts. These are the ultimate factors on which the fur trade has long rested; these were the intangibles underlying the history of the Methye portage.

Now bands of steel and highways bind close the southern land,  
From eastern shore to western shore the busy cities stand;  
Above the northern wilderness, down highways of the sky,  
Scorning the bonds of time and space the gleaming airplanes fly;  
Below on far-flung inland seas and foam-flecked rivers broad,  
Bearing the commerce of the North the busy freighters plod;  
But still through evening mists that rise when the long day is done,  
Steal the shades of a vanished race — a mighty race that is gone!



*A York boat under sail*





*Herstmonceux Castle, built by Sir Roger de Fiennes in 1441, now the home of the Royal Observatory.*

## ***The Royal Observatory Photographs the Sun***

by JACQUES PAUL

Photographs by Paul Studios

**I**N 1675 THE ROYAL OBSERVATORY was established by Charles II at Greenwich, England, a few miles down the Thames from London. Its object was the improvement of navigation. It was to enable Britain, then the foremost sea power, to provide her navy with positions of the sun, moon, planets and stars of sufficient accuracy for a ship to determine her position at sea.

Largely because of the important contributions made by the Observatory to navigation since then, it was decided at an international conference held in Washington in 1884 that the Greenwich meridian should be universally adopted as the zero meridian of

longitude. Greenwich Mean Time, the local time at the Observatory on the zero meridian, was accepted as standard.

Now the Royal Greenwich Observatory has a new home at Herstmonceux Castle. This fifteenth century brick castle stands in some 370 acres of the Sussex Weald, four miles from the south coast, between the holiday resorts of Eastbourne and Bexhill. Herstmonceux is a little off the Greenwich meridian, being 21 minutes of arc east (21 minutes of arc corresponds to 84 seconds of time), but this does not mean that the prime meridian will be shifted, or that Greenwich Mean Time will be altered. They will remain

the same but the astronomers working at Herstmonceux will make the necessary corrections for the difference in their observations.

For many years now the astronomical work at Greenwich Observatory has been severely and increasingly hampered by the dirt, smoke and impure atmosphere of London, while modern developments in brighter street lighting have produced an increasing glare in the sky at night, greatly hampering photographic observations. A move to the country was imperative if the observatory was to continue to do useful work.

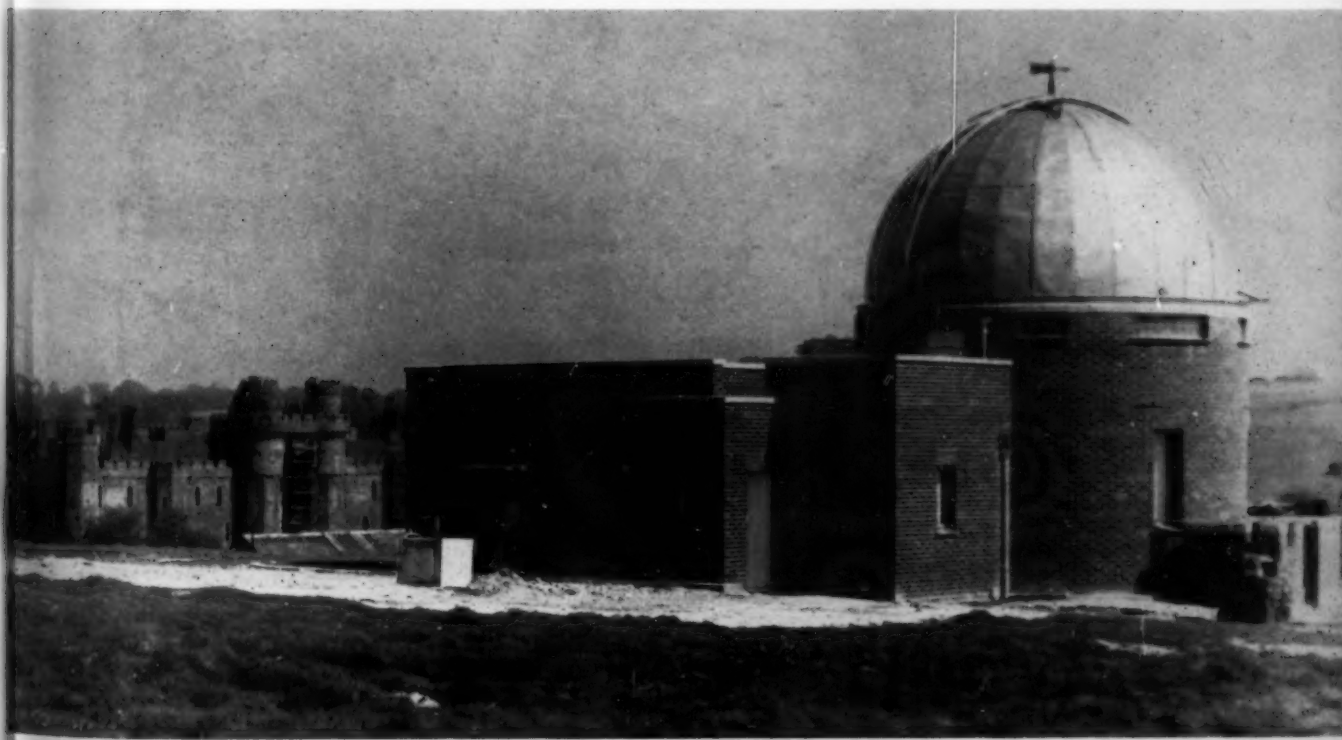
The first of the astronomical equipment to be shifted was the photo-heliograph, used by the solar department for photographing sun-spots. This department is concerned with taking daily photographs of the sun, using a four-inch photographic telescope which throws on to the plate an image of the sun seven and a half inches in diameter. Several pictures a day may be taken, and if clouds make this impossible, the observatory at Capetown can usually fill in the blanks.

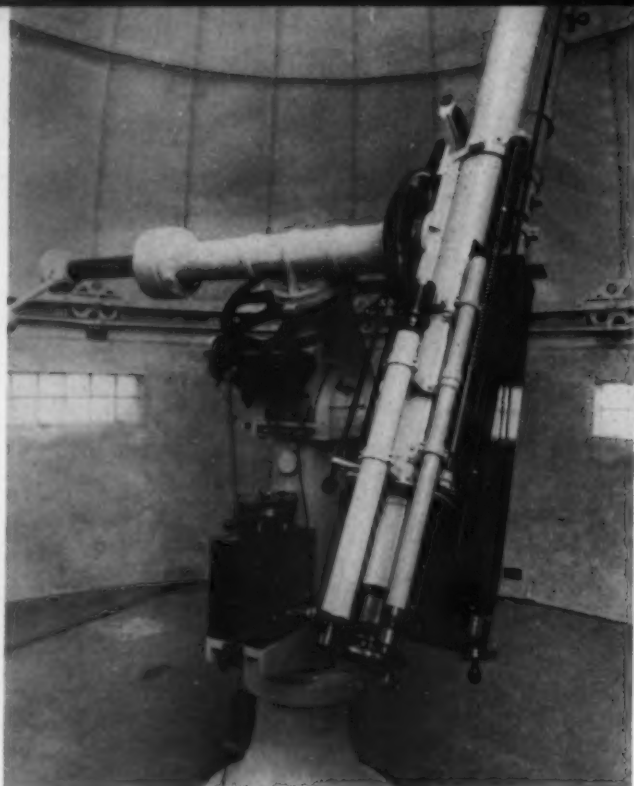
No pictures were lost however on the day the move took place. A photograph of the



*Ancient yew trees in the central courtyard of the Castle. Wisteria trails over the mellow walls of this fine old brick building.*

*The housing and dome for the first telescope and photo-heliograph at Herstmonceux. Other domes will be built, including one for the projected 98-inch refractor.*





*The photo-heliograph used by the solar department is combined with a 6¼ inch visual telescope for ordinary stellar observation. After assembling the equipment on its housing, electric wiring and control gear are adjusted.*

sun was taken in the morning at Greenwich; the telescope was dismantled, moved to Herstmonceux and re-erected, and another picture taken with it the same afternoon.

The photograph of the sun (the original negative plate, not a positive print as in ordinary photography) is examined in an instrument known as a solar micrometer and in this the area and positions of the spots are measured. Using these pictures the build-up and decay of individual sun-spots is watched and recorded. This information can then be correlated with the various effects on the earth which are believed to be caused or influenced by the powerful radiation which the sun-spots throw off.

These data, summarized day by day, are made available to radio research stations, who relate them to the phenomena of radio fading and other disturbances to radio communication. Long distance wireless reception is made possible by the reflection of the radio waves by the ionosphere which is created in the upper atmosphere by the steady stream of ultra-violet radiation from



*The telescope is pointed at the sun and adjusted until the sun's image is in the centre of the ground glass screen, when the control motor takes over and, by following the sun, keeps the image centred.*





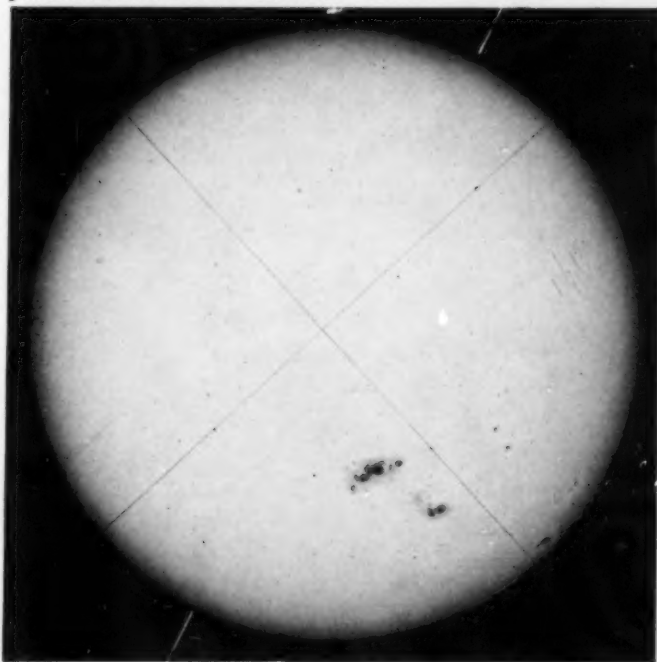
the sun. It is the great increase in the ultra-violet radiation from the sun at the time when the enormous and violent sun-spot eruptions occur on its surface which disturbs this reflecting layer and makes long distance radio communication somewhat erratic.

It has also been known for some time that the beautiful displays of the Aurora Borealis in the Arctic are due to sun-spot radiation, but British scientists consider that no evidence is to be found in the 74 years of records of the Royal Observatory to suggest that there is any connection between the sun-spots and the weather. The phenomena that produce our weather are so complex that any small effects that may be due to sun-spots are completely masked.

Also working at the castle is the chronometer department. Here, after every period of service, come the chronometers and watches of the Royal Navy, to be cleaned, overhauled, and checked. They are tested and timed under conditions that simulate all climates the Navy will meet from the Arctic to the Tropics. Between five and six thousand watches and chronometers pass through this department every year.

*Left:—The ground glass is removed and a photographic plate inserted in its place. The observer then watches, his finger on the button, for the moment when the sun is clear of cloud and the exposure can be made.*

*Above:—When the plate has been developed, fixed and dried it is fitted into the solar micrometer. By observing the sun-spots against a ruled grid the operator estimates their size and their position on the sun's surface.*



*Bottom right:—Photograph of the sun taken on April 9th, 1947 at Greenwich, showing a very large group of sun-spots. The white lines represent the sun's axis of rotation; the black lines are images of spider threads used in the position measures of the sun-spots.*

# Flight to Lynn Lake

(Extracts from a Journal)

by W. L. MORTON

July 5th, 1949

**M**Y COMPANION and I left Winnipeg at 6.14 a.m. and drove to the provincial sea-plane base at Lac du Bonnet, Manitoba. My companion's purpose was to view the proposed townsite at the new mine at Lynn Lake; I went along to see the North. At 8.30 we took off in a government plane, a new and sturdy Beaver. A steady, uneventful flight by the Winnipeg River and the west shore of Lake Winnipeg brought us to The Pas for lunch. From there we flew to Sherridon, where we were at railhead and at the northern limit of the active mining country of Manitoba. Beyond lay territory little travelled or known since the days of the fur trade, the mineral resources of which are only now being intensively probed.

At 4.15 p.m. we took off from Kississing, the air base of Sherridon. Scattered clouds

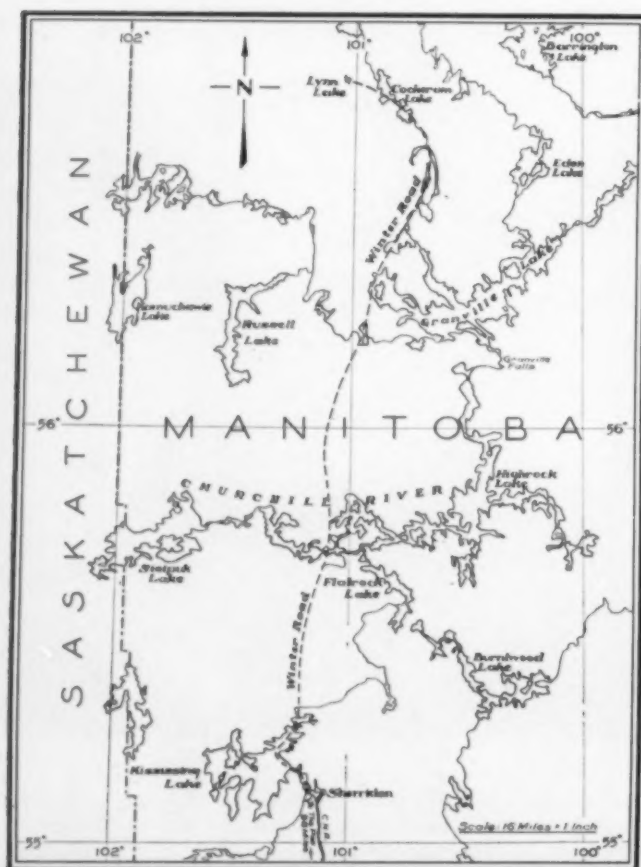
cast great blue shadows over the landscape, and the pattern of sun and shade imposed on the arabesque of water, rock and forest was striking in effect, magnifying the vastness of the terrain and intensifying its contrasts of rugged rock and level lake.

North of Kississing more rock showed than in the area to the south and less water and forest. This was rough country indeed; we had passed beyond the clay overburden, deposited by the Pleistocene Lake Agassiz, which had levelled and softened the terrain to the south. Here the Shield lay naked, except for rags of forest and patches of lichen.

At 5.13 I recognized the Churchill River below in a tremendous network of lakes. Indeed, this loose-jointed, powerful giant among rivers was recognizable only by the rapids which emptied lake into lake and by the strong currents which could be seen straining through them. The country here is immensely rugged and savage and the wide procession of lakes from west to north-west stirred me as no other panorama had yet done.

To the left lay Pukatawagan Mission on the Churchill. To the right the river wove by many channels into Highrock Lake, through which it ran north to Granville Falls, a potential power site, and on to Granville Lake.

The country west of Highrock and Granville is drained by the Laurie River into Granville. It is a country of much water and much rock, even barer than that to the south of the Churchill. The forest growth is visibly dwindling. Yet the land is fairly well drained, and muskeg comparatively rare. There for the first time the vastness, the barrenness, the savagery of the Shield depressed me. What was man but an anxious parasite in the wrinkles of this archaic, rugged hide? Almost all of the northern Shield country could manifestly never be cul-





*Preparing for the trip north from Lac du Bonnet Manitoba.*



*View of The Pas, looking westwards from the seaplane.*

tivated, domesticated and made habitable by communities of men. Elemental and primeval it was, and elemental and primeval it would remain until the end of time.

As a kind of antidote to this sense of depression, the minehead and buildings of Lynn Lake rose into view, bright and bare, miles ahead. It is curious how any work of man, winter road, surveyor's trace, minehead or trapper's cabin, stands out in the northern wilderness, so flagrantly does the straight line, the intelligent purpose of man contradict the wanton disorder of the tumbled and worn rocks of the Shield and its conforming vegetation.

Lynn Lake is a new mining development at East and West Lynn Lakes, two small bodies of water stretching north and south. They are divided by a low ridge about quarter of a mile wide, which is made into a peninsula by the Lynn River cutting across its southern end to drain the west lake into the east. The minehead rises at the north end of East Lynn Lake. The attached office building, store houses, and men's quarters are to the west of the minehead. On the inter-lake peninsula a village is rising, containing the homes of the married men and their families. A graded road, buff in colour, runs from the minehead around through the village to cross the Lynn River and end in the wilderness south of East Lynn.

We circled the minehead and came down on the waters of East Lynn, the west lake



*The Sherritt-Gordon mine at Sherridon, formerly northern limit of Manitoba's mining country.*

*A section of the Lynn Lake peninsula with the minehead in the background.*







*An aerial view of the minehead at Lynn Lake, together with office building, store houses and men's quarters; beyond them is seen the northern end of East Lynn Lake.*

being too shallow and rocky for use. We were then piled, with our luggage, into a jeep and whipped away around the lake to the staff quarters near the minehead. These, the bunkhouses and other buildings, were built of the lumber of army huts and to that simple and familiar design; but they were more warmly furnished and better fitted inside, being not only clean and comfortable, but equipped with running water and electric power (generated at the minehead).

Such were the amenities I found at my farthest north. Our arrival having been so well timed, we were hurried to dinner in the cookhouse. The warmth of our welcome would have made any fare good, but in fact we should not have done better anywhere else. In addition to the staple foods there were fruit juices, milk, vegetables and preserved fruits in almost embarrassing abundance. As I ate, I could see through the windows the spindly jack pines of the North looking down the slope of the ridge from which they had been cleared by the axe and bulldozer, just to remind me that I was indeed at almost 57° north latitude.

After dinner the party was taken in the surprisingly capacious jeep to the end of the camp road to see the site of the high-grade

orebody of the Lynn Lake find. The site itself was unimpressive, being merely a hump torn by bulldozers and marked by the concrete bases prepared for the minehead. The cores from the diamond drilling were, however, another matter. Each core had been cracked along the middle from end to end. One-half was sent for assay and the other was laid snake-wise in the five grooves of a box about four feet long and three inches deep, hinged on one side. Every box had its serial number, and the boxes, some hundreds of them, were stacked in series in two large sheds.

Thus the complete mapping of the orebody was preserved on the site; and from the drillings, as we were shown later, its underground profiles, depth and extent were plotted graphically. The ore, of which the valuable elements were nickel and copper sulphides, was very rich—rich enough to ensure the development of Lynn Lake, but not, unfortunately, extensive enough by itself to ensure that the new development would be a Manitoba Sudbury.

It was still quite light when we returned to staff quarters. (At this altitude there is no darkness, only dusk.) I was shown the ranked sleighs used in tractor-trains during

*July 6th, 1949*

the winter for bringing in heavy supplies and cordwood. All the equipment and buildings, all the annual supplies for Lynn Lake, had been brought in by this means. The sleighs were painted bright orange; the runners were heavy wood shod with steel, the distance between them being possibly six feet, the racks on the bunkers eight to ten feet in width and sixteen to twenty in length, at an estimate. They are pulled by caterpillar tractors. I was also shown a Lynn tractor, so called from its maker, with caterpillar treads behind and heavy skis in front. It is a machine specially built for work in snow and is almost three times as fast as the ordinary caterpillar.

Many gardens were being attempted and the first growth was strong, though backward compared with that at Sherridon. The soil had been analyzed at the University of Manitoba and was found to be very acid and deficient in nitrogen. It is, in fact, not soil at all, but rock flour, the result not of decomposition but of mechanical action, and our hosts were sceptical of the gardens maturing.

Whereas I had expected to be devoured by mosquitoes and flies and had come armed with "6-12", I saw few mosquitoes, and those of a mild and indifferent disposition. The clearing and drainage explained this phenomenon; a camp in the bush would have been another tale.

So to bed, singularly weary after about 750 miles of travel in one day.

Shortly after 9 a.m. I attended a meeting between my companion and the officials of the Sherritt-Gordon Company to discuss a townsite for Lynn Lake. The company had a site to propose, the ridge between the two lakes. It is undoubtedly the obvious site at Lynn Lake, as it affords a situation with good drainage, deep soil free from outcrops, plenty of room and protection from forest fire on three sides. The discussion therefore was switched to the operation of the new Local Government Districts Act of Manitoba, and ran on through the morning.

The afternoon was spent in examining the proposed townsite. It seemed to be a "natural". The only doubts that arose were whether it would be possible to save some of the pure jack pine stand on the ridge, and whether the muskeg fringe along the lake shores would prove disadvantageous.

The walk over the site gave me an opportunity for further observation. The temporary houses on the sites had been built at Sherridon and freighted to Lynn Lake entire. They were of "lean-to" construction, measuring fourteen by twenty feet. All were heavily insulated. One made a comfortable cabin; two put face to face made a fair sized dwelling. The school was such a building, but with the roof raised for better drainage and greater airiness. Some cabins from the first camp remained; these were made of upright logs, the chinks being stuffed with moss or artificial insulating material held in

*The post-office at Lynn Lake.*



*Inside the radio room.*





*Core, obtained by diamond drilling, is removed prior to being placed in the serial corebox (at lower right).*

by slender poles nailed to the logs. This seems to be the common type of log construction here (owing, probably, to the lack of large logs).

In the muskeg along the lake Labrador tea was in bloom. The blueberries had fruited, but I was told the berries mature late and are too small to be worth gathering. Caribou moss was fairly common but few flowers were to be seen. Bird life was abundant: we saw robins around the buildings and a great many crows and herring gulls around the garbage dump and cookhouse.

When the inspection was finished we sat and chatted at the wharf. The children came down to swim with some of their mothers in charge—all fine, healthy children, wearing the latest in bathing suits. The afternoon was warm, the flies few, and one might have been at any lakeside in the Precambrian.

Later we drove by jeep to the minehead. As a section had just been blasted, it was impossible to descend until the air cleared. We were accordingly shown over the surface plant. Diesel-driven compressors were at work furnishing air pressure for the drills. Alongside was the hoist house, in which two large drums wound and unwound the steel cables that ran to the top of the shaft house.

The ascent and descent of the cables was controlled by buzzer signals and markers on the drums which indicated the position of the cage in the shaft. The hoistman is a skilled worker with a heavy weight of responsibility; any failure in his alertness and precision might have fatal consequences for the men in the cage, or below. Behind the hoist house was the site of the original strike; the area had been cribbed with logs against the rock pile built up around the minehead, so that visitors might see what they always wish to see—the place where the strike was made. This was a piece of black rock in puddles of water.

A pilot plant was built nearby; in it a first run of muck, with no ore in it, was being made to test the machinery. At Lynn Lake they are attempting, preliminary experiments having been successful, to separate nickel and copper from the ore and one another entirely by chemical agents; that is, without the usual smelting. A plant to separate a nickel sulphide and copper sulphide concentrate from the ore will be built at Lynn Lake, and the concentrate shipped out for the separation of the two metals elsewhere. The first problem is to eliminate the talc which the ore contains; this will be done by compressing all other constituents and floating off the talc. The next step will be to float off the nickel and copper sulphides. Flotation, of course, is accomplished by chemical reagents that cause the desired constituent to rise to the top of the sludge in bubbles, which are then skimmed. The plant looked rather like a laundry in which an exceedingly dirty wash was being put through a series of foamy tubs.

Much of the power for the mine and camp is generated by two steam engines, of the old threshing-machine type, raised on greatly enlarged brick fireboxes. They are fired by wood cut locally; but that on hand was spindly stuff, and the supply was causing concern. It is already hauled from a distance of fifteen miles.

As dinner time was approaching, we returned to quarters. On the way back I learned that there is a two-bed hospital in



the camp and a doctor at Sherridon. The company's two planes each make two scheduled flights a day from the railhead at Sherridon.

Meanwhile the weather had changed. The sky had begun to cloud in mid-afternoon; at 4.30 it started to rain gently, as it had done, we were told, all summer.

After dinner we returned to the minehead and were fitted out in "the dry", the room where the miners change their clothes and haul up their underground garments on pulleys to the rafters to dry.

When our turn came, we stepped into the jiggling cage and descended smoothly enough to the bottom of the 1,000-foot level. Only our lamps gave light on the way down, and by them we saw the openings made at the hundred-foot levels and two pumping stations on the way down. The shaft was cold and there was some water dripping. The temperature in this northern mine is 32° F. a short distance below the surface; at 1,000 feet it rises to 38°.

At that level two drifts were being driven in opposite directions at angles of 45° from the shaft. To permit horizontal diamond drilling, the drifts were angled. We watched a driller and his assistant, working on contract, bring a core out of the hollow drill and place it in the serial corebox. The purpose of the drilling was to verify the position of the sloping ore body which had been plotted by surface drilling.

At the end of the drift a mechanical mucker was at work, scooping up muck and tossing it—one is tempted to say over its shoulder—into the waiting dump car. The local rock makes muck that is difficult to handle, as it breaks irregularly, with many pieces of a large size.

The minehead is situated on the bigger, low-grade orebody at Lynn Lake. A large tonnage has been proven for the first 1,000 feet. From that level further diamond drilling will be done and if the orebody continues farther down, as is expected, Lynn Lake, the proven tonnage of which already justifies development, will be a big mine, perhaps on the scale of Flin Flon, perhaps even on that of Sudbury. The immediate hope, however, is to prove sufficient tonnage to bring out an extension of the railway from Sherridon or a branch from the Hudson Bay line. The cheaper transportation by rail would greatly increase the rate of development and of return on the investment.

*July 7th, 1949*

The weather report from Sherridon at 1.45 p.m. was favourable. Fifteen minutes later we took off from the calm waters of Lynn Lake and by Sherridon and Snow Lake returned to The Pas. The following day we continued on via Norway House to Lac du Bonnet, leaving behind the northern wilderness and regaining southern Manitoba's familiar pattern of square fields and straight roads.

*Horizontal diamond drilling in progress at Lynn Lake.*



#### EDITOR'S NOTE-BOOK

Wilfrid Eggleston, after an eminent journalistic career, is now Director of the Department of Journalism at Carleton College in Ottawa and columnist for Toronto Saturday Night. His latest book, *Scientists at War*, is an account of Canadian achievements in the scientific field during World War II. Much of his boyhood was spent in the Cypress Hills about which he writes in this issue.

\* \* \*

Dan McCowen, well-known naturalist, lives in Banff, Alberta. He photographs, writes about and lectures on the fauna and flora of Canada.

\* \* \*

Dal Stevens is an Australian writer who reports on the scene in that continent. The photographs of aboriginal art were furnished by the courtesy of the Australian High Commissioner to Canada.

\* \* \*

S. C. Ells, engineer, is one of the pioneers whose exploratory work in northern Canada helped to open up the country. His keen interest in the development of Canada and extensive research have resulted in a fund of information and the production of articles, poems and drawings recording the life of the northern vanguard.

\* \* \*

Jacques Paul, who writes of the Royal Observatory, runs a photographic studio at Eastbourne in England.

W. L. Morton is chairman of the Department of History and professor of Canadian History at the University of Manitoba.

\* \* \*

On January 9th the Society, jointly with The Royal Astronomical Society of Canada, sponsored a lecture by Dr. V. B. Meen on "The Great Ungava Crater". The meeting was honoured by the presence of our Patron, the Governor-General and the Viscountess Alexander of Tunis, who brought a party with them. Dr. Meen, director of the Royal Ontario Museum of Geology and Mineralogy, gave a most interesting account of the first visit, which he led, to this vast crater in northern Quebec, comparable in size to the smaller craters on the moon. Dr. Meen illustrated his talk with a particularly attractive motion picture in colour.

\* \* \*

#### Industrial Design Competition

Six prizes aggregating \$10,000 will be awarded by the National Industrial Design Committee to stimulate interest in good industrial design among designers, manufacturers and the general public. Competitors are required to submit designs of equipment for normal domestic requirements, either in aluminum or in wood. Three prizes will be awarded for each classification, the first amounting to \$2,500, the second to \$1,500 and the third to \$1,000. The products must be of Canadian materials, produced in Canada and must have a ready appeal to the average Canadian.

Designs should be submitted to the National Industrial Design Committee, National Gallery of Canada, Ottawa, on or before March 15, 1951. Designs should be original, and must conform to the basic principles of

## ANNUAL MEETING

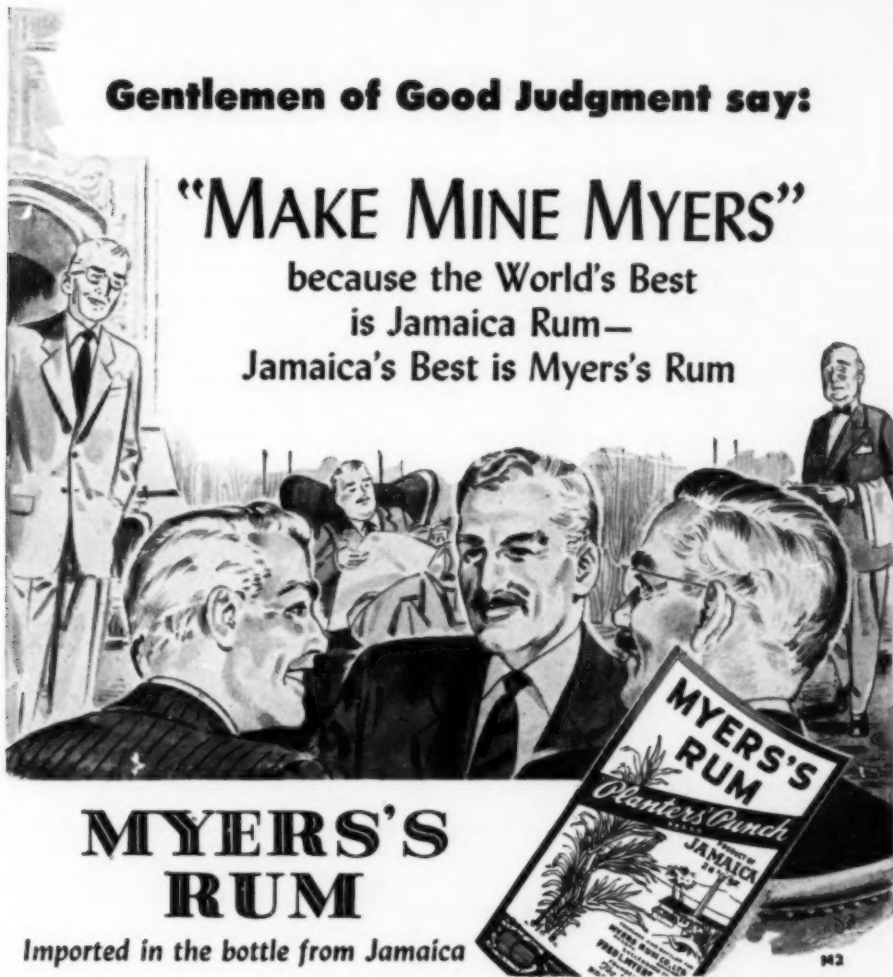
### The Canadian Geographical Society

The Society will hold its twenty-second Annual General Meeting in the Lecture Hall, National Museum of Canada, Ottawa, on Friday, February 23rd, 1951, at 8.30 p.m. The speaker at the meeting will be Dr. J. T. Wilson, O.B.E., Professor of Geophysics at the University of Toronto, whose illustrated address will be about his recent travels in New Guinea.

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good product design, such as convenience in handling, simplicity and grace in appearance, durability, honest use of materials, harmonious relationship of all parts, and ease of production. Sufficient detail must be provided, in order that a prototype may be made. If possible, sketches showing the various stages in the development of the design should accompany the entry. Prize-winning entries will remain the property of the designer but the National Industrial Design Committee retains the right to exhibit and otherwise publicize the winning designs.

The competition is open to any Canadian citizen, with the exception of members of the committee.

Judges will include Ernest Cormier, architect and engineer, L. V. Randall, industrialist and professor of art at the University of Montreal; J. K. E. Cox, of the Aluminum Company of Canada Limited; W. J. LeClair, secretary-manager of the Canadian Lumbermen's Association; and S. Chernayeff, Director of the Institute of Design, Chicago. They have power to call in additional experts on design.

### AMONGST THE NEW BOOKS

#### **An Introduction To Economic Geography**

by L. Dudley Stamp and George H. T. Kimble

(Longman's, Green and Co., Toronto, 1949,

302 pp., \$2.25)

This is the latest volume of the Canadian series *Geography for To-day* and has everything to recommend it as a class-room text and a reference book. It is, in short, a compact encyclopaedia dealing in the most fascinating way with the major regions of the earth, their climates, natural resources, populations, trade and industrial development. Their mineral wealth and derivative industries are given due consideration, the value of the key metals, for instance, being emphasized in the statement "In time of war the possession of supplies of the key metals may be an important factor in the life of a nation".

Every teacher knows how difficult it is, even for an older pupil, to select the information needed for a project or an essay from long erudite articles in the standard encyclopaedias. In this book children will find a



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wealth of factual information, brought together in clear-cut divisions and briefly and delightfully told, with the important addition of an amazing number of maps, graphs and photographs. The illustrations are really exciting, many of them reproductions of Dr. Stamp's world collection of photographs and usually accompanied by valuable notes explaining their significance. The chapter headings give but an inadequate idea of the immense amount of information each contains. Three chapters are devoted to the world's vegetable products, then follow animal products, the world's forests and their products, the world's fisheries and their products, power and minerals, how the nations share the world's resources, and a most comprehensive chapter on transportation and communication, describing the

the world's shipping, aerial transportation, telegraph and radio, waterways and canals.

The last chapter, "Canada in world economy", is typical and of vital interest to all Canadians. It begins thus: "Of all the geographical factors which help to shape the life of a country, its world position is the most important. World position fixes the broad climatic features, the climate, in turn, decides the productive uses to which the land can be put, and these, in their turn, go far towards setting the general pattern of settlement and industry. Then again the location of the country in respect to its world neighbours helps to determine its commercial fortunes in time of peace and its military fortunes in time of war". This general theme is admirably developed in the succeeding pages, dealing in detail with Canadian commercial geography and the possibilities lying ahead.

The authors are eminent British geographers of international reputation. Dudley Stamp is professor of social geography in the University of London and a prolific contributor to geographical journals. Dr. Kimble, author of several books, has been head of the Department of Geography of McGill University for the past five years, building up an enviable reputation which has led to his appointment as Director of the American Geographical Society of New York and his loss to Canada.

The book concludes with a useful series of some seventy "Revision Questions" by which the student can test his grasp of the subject, not only of the foregoing text but his geographical knowledge in general.

*To our  
European readers*

Early in 1951 the first four of a series of lectures on

**CANADIAN GEOGRAPHY**

will be given on Saturdays at 10.30 a.m. in the Cinema at The Imperial Institute, South Kensington, London, S.W.7

**Jan. 27 ONTARIO**

*by J. S. P. Armstrong, Agent-General for Ontario*

**Feb. 3 SASKATCHEWAN**

*by Graham Spry, M.A., Agent-General for Saskatchewan*

**Feb. 10 SOME CANADIAN MAMMALS**

*by Harper Cory, F.C.G.S.*

**Feb. 17 BRITISH COLUMBIA**

*(Speaker to be announced later)*

**ADMISSION BY TICKET**

Applications for tickets (free) should be made to W. H. Corkill, European Representative, The Canadian Geographical Society, The Mead, West Dumpton Lane, Ramsgate, at least 14 days prior to each lecture.

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There is, of course, an excellent index. Whether for serious study or casual reference, no Canadian household should be without this stimulating and authoritative book.

F. E. FORSEY

\* \* \*

### The Man-eating Leopard of Rudraprayag

by Jim Corbett

(Oxford University Press, Toronto, \$2.75)

This is one of the most memorable books of its kind that I have ever read. It recounts the long hunt that ended in the death of a man-eating leopard in the hills of India, a leopard which, between the years 1918 and 1926, killed at least a hundred and twenty-five people and, quite probably, a good many more. No matter what means the hunters tried, traps, poison, ambush, the leopard, by luck and by cunning, evaded them all for years.

Writing of these events some twenty years later, the author gives us a faithful account of the hunt and, all unwittingly, paints an even more amazing portrait of himself. Here one sees the man's skilled woodcraft, his memory for topographic detail, his patience and tirelessness, his utter fearlessness, his complete modesty, and his great affection for a simple and lovable people.

In spite of his relentless pursuit of the man-eater, there was never any feeling of malice or spite. At last the "evil spirit" (for such the natives were convinced he was) lay dead—"Here was only an old leopard, the best-hated and most-feared animal in all India, whose only crime—not against the laws of nature, but against the laws of man—was that he had shed human blood, with no object of terrorizing man, but only in order that he might live; and who now, with his chin resting on the rim of the hole, his eyes half closed, was peacefully sleeping his long last sleep".

DOUGLAS LEECHMAN

\* \* \*

### Canada

edited by George W. Brown

(University of California Press; University of Toronto Press-Saunders, \$6.50)

This is the tenth single-country handbook in the United Nations Series published by the University of California. The twenty-four chapters are written by a remarkable array of authorities who are all Canadian by birth, adoption or education. With an introduction by the Editor, the whole work is divided into six parts: The Setting, Historical Background, The Economy, Political and Constitutional Scene, Social and Cultural Institutions, and External Relations. Fifteen plates of photographs appear together as "Aspects of the Canadian Scene".

The maps, regrettably, only number four but are in keeping with those of the other volumes in this series. They were drawn in the Geographical Branch of the Department of Mines and Technical Surveys but technically fall far short of their best work, particularly in the case of the "Physiographic Divisions of Canada".


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The map entitled "Population of Canada" bears a remarkable resemblance to similar maps by Professor Taylor, although no mention is made of the Dean of Canadian geographers.

Two of the maps have been used to illustrate the chapter on geography by J. Wreford Watson. This chapter is a brief, but thorough, survey of the geography of Canada and shows "a country in a strategic international location with ample space, considerable resources, high *per capita* production, and a growing population". A good deal of additional geographical material, however, is included in the other chapters, notably those on Eastern Canada by A. W. Currie, and Western Canada by Vernon C. Fowke.

The attempt, as expressed by the Editor, has been "to emphasize fundamental and historic tendencies, and to make clear the persistent characteristics which mark the course of Canadian development". Inevitably, a book of this kind must exhibit different styles of writing and differing methods of interpretation and evaluation but, although each chapter deals with a certain specialized field, this underlying theme is ever present. While perhaps, as J. Bartlett Brebner suggests, Canada is better considered as a "nation-state" rather than a nation, the conclusion is reached, time and time again, by the individual contributors that Canadian society has characteristics of its own which distinguish it from the society of the United States of America, yet the difficulties of maintaining such a situation are not minimized. No phase of social, economic and cultural life of Canada is left untouched. Interesting is Walter Herbert's recognition of the contribution of the *Canadian Geographical Journal* to "The Cultural Pattern" and Walter Kirkconnell's mention of The Canadian Geographical Society in his chapter on "Education", although this hardly warrants prefixing the Society with "Royal", as occurs once.

The description of the organization of the Federal Government may prove slightly confusing, particularly to the foreign reader, in view of the reference to a Department of External Relations and the fact that the detail connected with the reorganization of the Department of Mines and Resources is variously represented, but this should not detract from the basic usefulness of the volume in aiding Canada's fellow-members of the United Nations in an understanding of her people and their attitudes. Indeed, the publication should appeal to all thoughtful readers who are interested in Canada and its place in the modern world and, although it is no mere compendium of information, serve as a useful reference work. The notes and references are collected at the end of the book, together with a selected bibliography and index.

NORMAN L. NICHOLSON



**Fishing Is a Cinch**

by David B. Reddick

(McClelland &amp; Stewart Limited, Toronto, \$4.50)

Written for both the experienced angler and the novice, *Fishing is a Cinch* encompasses practically every aspect of sport fishing in Ontario and Quebec. Most of the book is based on the author's personal experience on countless streams and lakes. These accounts of fishing adventures make entertaining reading, partly because Mr. Reddick has not hesitated to tell of his failures as well as his successes.

The title may seem misleading to the non-fisherman, because after describing his favourite pastime as a cinch, the author goes on to tell of its many complexities. However, he has managed to do it in such a way that a very scientific business has been to a great extent simplified for the reader. Mr. Reddick himself thinks that fishing is clothed in too much scientific mumbo-jumbo.

The range of the book is impressive. The personal narrative, which makes the book stand out, is interspersed with a mass of detail about all kinds of tackle, from simple hooks to flies and lures. The extent of the coverage on bait, for example, is shown by the author's discovery, through trial and error, that the best kind of container for worms is a shallow, oblong tobacco tin with a hinged lid. The chapters on the fish themselves show evidence of a great deal of research as well as a painstaking first-hand study of practically everything concerning fish.

Even with his extensive knowledge, though, the author admits that there is much to be learned. When he sees anything new which holds the promise of a better way to catch fish, he says he is a "Gullible Gus", and ready to give it a try. His tastes are catholic, and he is hard put to it to pick favourites, but he hugely admires the muskie, the ouananiche and the small-mouth bass for gameness and he thinks pike makes the best eating. However, after naming the qualities of several others, he adds: "They are all grand fish and I glory in catching any of them—right down to the mudpout and the pumpkinseed. I don't know how I'd get along without a single one of them".

To round out his book, Mr. Reddick has a chapter on the best methods of cleaning fish and one on knot-tying, both helped out by illustrations. The usefulness of the volume is also increased by several pages on the need of careful preparation of fish for cooking. The author's opinion is that fish are not at their best, for eating purposes, when fresh-caught, but should be kept for a day or two. To his mind the shore dinner exemplifies fish at its worst.

The excellent black and white drawings throughout the book are by Geoffrey Goss.

JAMES KINLOCH

**The Saskatchewan**

by Marjorie Wilkins Campbell

(Clarke, Irwin, Toronto, \$4.50)

"The Saskatchewan drains the Rocky Mountains into the Atlantic Ocean" and, the author points out, the statement is almost literally true. This story of the Saskatchewan River and of the thousands of square miles of its watershed is, for Canadian readers, one of the most interesting of the Rivers of America series.

Mrs. Campbell approaches her task with the great advantage of a personal knowledge of much of the country she writes about, and she has done it not only with sympathy and understanding but also with humour, that priceless garnish of which many less competent authors seem to be so shy.

Though she knows the country, she did not rely on her own resources alone. She consulted many authorities, read scores of old records and documents, enjoying to the full the quaint spellings and phraseology (I suppose our English will seem just as whimsical three hundred years from now!), and she has filled her pages with fascinating details of almost legendary men and deeds, some already familiar and others new to most of us.

It is a saga of fur and cattle, wheat and oil, rich natural resources which at one time seemed endless in their abundance. It is the record, too, of the growth and development of a great land, from the most primitive beginnings to a highly integrated economy supporting many thousands of people and with a promise of an even greater future.

The sections concerned with the Prairie Provinces as they are today are, if possible, even better handled than the story of the early days of the great fur companies. The whole recital will, perhaps, never be written for it grows longer and more complex year by year but the flavour of it has been caught and the book carries with it a spirit of confidence and optimism that brings a tingle to the spine and a smile to the lips.

Inevitably, in a book so full of facts as this, minor slips will occur, such as the old myth about the buried pemmican (actually the mycelium of a fungus *Polyporus tuckahoe*), and the derivation of the word barbeque (first encountered in 1697) from a western cattle brand.

The line cuts by Illingworth Kerr are strong and capture the spirit of the place and they contribute not a little to the author's success. A fair map, a good index, and a well-selected bibliography help make this a must for the library of Canadian historians or geographers.

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